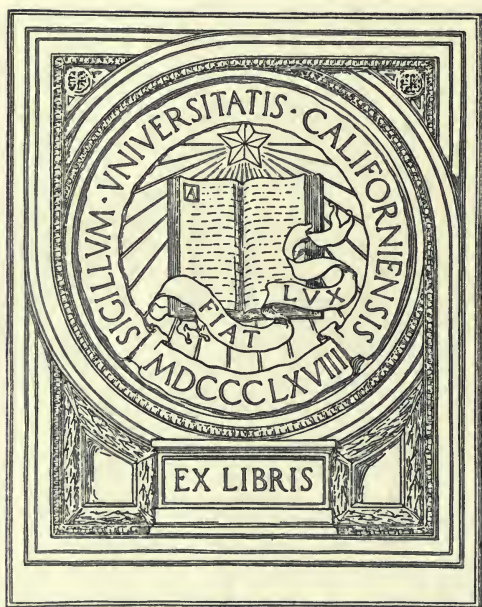


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No. 1

THE USE OF GLIMPSES IN EDUCATION.

BY EDWARD R. SILL.

[Belles-Lettres Professor, University of California.]

THE pleasant thing about traveling in the mountains is the succession of sudden glimpses one gets ; now into a leafy chink among the rocks, now down across some blue gorge, now between two dark slopes to a snow-peak touched by the sun. The feet that would have dragged heavily along a plain are full of springs among the hills. We go on from point to point quickly and buoyantly, whistling and smiting our staff against the rocks for very overflow of vigor, simply because the way is full of surprises. We feel that it is a world where all sorts of delightful things may appear at any moment, and we are glad to be in it and to take possession of it. So it is in all progress, and in education as well. We go most happily and most rapidly when the way is enlivened by constant glimpses on one side or the other and ahead.

It is one of the common fallacies about education that a child must only undertake what he can do thoroughly ; that the public schools teach too many things, and require too many text-books, and so on : as if the mountain traveler

were told that he must only see what he can thoroughly walk over ; that the road has too many outlooks, and ought to be boarded up on both sides from beginning to end.

The truth is that the mind, young or old, cannot with much profit be dragged unwillingly into any new attainment. It must go forward from some desire to go forward. After all, it is what the mind does that educates it. And it will not do much that is profitable without interest and desire. And this desire will only come from seeing glimpses, at least, of many things beside and beyond the mere task in hand. Such glimpses a good teacher continually gives, broadening the child's horizon, and showing him that the world is not a dry treadmill, but a wide region where constant increase of attainment is not only possible, but worth while.

This is one of the imperative reasons for educated teachers, and for a wide and varied curriculum in the common schools. A healthy mind, in childhood as truly as afterwards, has several different faculties, and needs many objects for each of these to keep it in wide-awake activity. An intelligent man or an intelligent child naturally thinks of many things in the course of a day, and has feelings with reference to many things. It is Nature's way ; and however elaborately we construct our machinery, it will only work so far as it conforms to natural laws. It is not by steady drudgery on one subject, exhausting that before touching another, that any human mind ever advances. On the contrary, some new book, or a talk with an acquaintance, or an article in a magazine, gives a side-glimpse into some unexplored region : it may be days, weeks, years before we can do thorough work in that field ; but the glimpse was given, and some time the mind will follow it up. And the glimpse we must have, or we shall never see or seek that field at all.

The same thing is true of character as of the intellect. There must be aspiration before attainment is possible ; and in order to aspiration there must be some vision of the higher character, some fine quality that gleams out in one of Plutarch's lives, or one of Smiles' biographies, or in some heroic anecdote of the newspaper, that will some day—it may be years hence—have power over us.

The teacher at least has long ago put away that old folly that it is only necessary to know what one is going to teach—meaning the three or four things on which the pupil will definitely be examined. The ideal teacher, even of a primary school, should have mastered all sciences and all literatures. He cannot directly impart his highest attainments nor his trained strength to the children, but for every gain in his own scholarship he can better point out to them pleasant places for them to walk to, and can inspire them with a desire to go. They will do their present work all the better, because with all the more brightness of interest, for the glimpse into astronomy, into botany, into history, into literature. It need not be a distracting dazzle of fireworks, but now and then a looking-up from the work in hand, and an inspiring glimpse into a far-off world of wonder and beauty. The ability to impart aspiration is one of the best tests of a teacher. The value of a grammar school teacher should be judged, not only by his ability to promote pupils into

the high school, but by his success in inspiring in them a desire to go through the high school; and the value of a high school teacher should be judged not only by his fitting pupils for college, but by his making them desire a liberal education; and the best college instructor is he who not only gives the student thorough knowledge, but an insatiable thirst for more and more of it. It is a poor education indeed that tries to be complete in itself, and leaves the pupil with no desire to go further. It is a good education that gives him that desire, almost by that test alone.

It needs but a little knowledge of the mind and its ways of working and growing to refute the notion that our courses in the schools and colleges are too extensive, or the text-books too many. So far as they give these otherwise unattainable glimpses of intellectual regions to be attained and enjoyed, they are indispensable to culture. We attain only by good work. We work well only through active desire. We desire only that which we see, or of which we catch at least some inspiring gleams from afar.

On any such subject as education we hear many things said which sound admirably, and might easily be taken for maxims embodying the wisdom of ages, and which, nevertheless, are nonsense as applied to the case in hand. To give the "wise saws" is easy enough, but the difficulty comes with the "modern instances." For example, it has a finely judicious sound to say, "Better know one thing thoroughly than to half know a hundred things." Now, as an incentive to thoroughness in the one thing, this is all very well; but as an excuse for not knowing (or teaching) the hundred things at all, it is a poor sophistry. The truth is, so interwoven are all the great subjects of human thought that it is impossible to know any one thing well without looking into many things. Take, for instance, the commonest study of the schools; say, geography. To have any knowledge—*i. e.*, any realized knowledge, beyond a mere crammed jargon of names and words, involves a considerable acquaintance with very many subjects. Cities, capitals, exports, commerce, manufactures, races—even the simplest statements of merely physical geography—all these involve ideas of many regions of science and society, or are mere meaningless words, calculated to encumber the mind without enlightening it. So of the school history. So of the school reader, from the primer up to Shakspeare. If reading means reading with the mind, not merely with the eye and the lips, it involves continual glimpses of things beyond the ordinary curriculum of the schools.

In fine, it is useless to seek to educate a child of this present age, to fit him to live amid the wide and complex intellectual life of this time, by the same two or three studies which were adopted when only these were known. It is pitiable to see a mind of the Nineteenth century squeezed into an educational machine of the Sixteenth, like the hapless dwarfed infant grown in a distorted Chinese jar.

It must be remembered that school training is not and should not try to be the finishing of an education. It is all preparatory; whether the pupil's future course of development is gained from higher school grades or from life. "Thorough" he should be, in the sense of mastering each idea that he fairly

grapples with in his daily lesson ; but he has a sadly narrow course if, besides this, he does not receive an awakening of his faculties and a broadening of his horizon by many a bright outlook into further fields of acquisition. There is, indeed, no field of learning so far away, no summit of science so high, but it should send some sunrise rays of intellectual quickening down into the lowest grades of the common schools. But this requires, to be sure, educated teachers ; teachers, moreover, who do not rely on any past and "finished" education, but who keep their wits awake by constant contact with the best intellectual life of their time, both among living men and in literature. It is only the complaint of ignorant or penurious minds that our schools teach too much or call for too many text-books. Why should not the child of to-day begin, even as a child, to live the life of his own time, and not of the Dark Ages ?

The teacher who fully appreciates this, and is trying to effect this end, may feel isolated and timid or perplexed in his isolation, surrounded on all sides by narrower views and practices. But he should go his own way boldly. He, at least, knows what education means in these modern times. He has made teaching his study and his life-work. He should let no smaller views of men who do not understand the subject interfere with his plans. If the children in his care are to come into their birthright of a full development, it must be through his courageous following out of his own high ends, in his own chosen way, against whatever ignorant and grudging opposition.

MY SCHOOL-MATE.

BY O. S. INGHAM.

[Superintendent of Alameda.]

THE somber veil that hangs athwart
 The light of other days,
 With trembling hand and saddened heart
 I slowly, gently raise ;
 And down the long and vistaed sweep
 Of vanished, happier years,
 I gaze, till feeling full and deep,
 Finds vent in bitter tears.

O school-mate mine ! best friend of yore,
 How dear the old times seem !
 In memory fond they live once more,
 Bright as the poet's dream :—
 Bright as the mellow, golden glow,
 In which the daylight dies,
 A reflex, flashed to the night below,
 Of the light of Paradise.

'Mid the forms beatified that live
 In the sacred "auld lang syne,"
 None tenderer joy to memory give,
 None deeper grief than thine ;
 For thy silv'ry laugh, thy radiant smile,
 Thy gleeful, speaking eye,
 Thy trusting heart, fond, free from guile,
 Are now with days gone by.

Since school-boy days, long years have passed,
 And still I walk life's way ;
 The sky has been at times o'er cast,
 My hair is touched with gray ;
 But through the long and weary time
 My heart has ever clung
 To school-boy days, when life's glad prime
 O'er us its brightness flung.

O friend of yore ! if living still,
 Oft when thy heart is sad,
 Does not the past thy bosom thrill,
 And thy heart beat quick and glad ?
 Or has it fled thy memory, all,
 And vanished 'mid the gloom
 That hangs, a heavy, shrouding pall
 O'er early friendship's tomb ?

ARITHMETIC—ITS STUDY MADE EASY AND PLEASANT.

BY M. M. BALDWIN.
 [Groton, N. Y.]

WHAT I have to advance on this subject will be condensed within the narrowest limits possible ; and, as far as consistent I prefer to let eminent scholars speak for me.

I. The subject of arithmetic itself is easily comprehended. We shall realize this if we remember—

(1.) That *unschooled* men in all ages have understood and performed its *vital* processes.

(2.) That there are excellent accountants among us who have never learned a rule in arithmetic ; nor have they ever studied any but a child's arithmetic.

(3.) That many of our best business men have never advanced in written arithmetic beyond fractions.

II. Its fundamental principles are few and simple.

(1.) "Arithmetic is founded on Notation."—*Ray's Higher Arithmetic*.
 "When we enter into the spirit of the methods of arithmetic we perceive that

they all flow clearly and simply from the very principles of Numeration and a few axioms."—*Le Verrier, the great French mathematician.* "Every change we make upon the *value* of a number must *increase* or *diminish* it."—*Thomson's New Practical.*

III. Its fundamental operations are but two ; Addition and Subtraction.—*See Duncan's, Jamieson's, and Wilson's Logic.*

(1.) "Multiplication is a short method of *adding* equal numbers."—*See Quackenbos's, Davis's, Thomson's, and Feller's Arithmetics, Day's Recent Logic, and Rev. J. Currie, of Edinburgh Training College.*

(2.) "Division is but a different kind of subtraction."—*See Wickersham's Methods, DeGraff's School Room Guide, Sheldon's Elementary Instruction, and Ray's Arithmetic.*

(3.) "Multiplication, Division, Involution, Evolution, etc., are only more useful because shorter methods to the same results."—*Prof. Wilson, Cornell University, Logic.*

If things are so (and who will dispute them), why is it that pupils in all our schools spend so large a portion of their school-days in the study of arithmetic? Here is one answer :

"We do not hesitate to acknowledge that the teaching of elementary mathematics has lost its former simplicity, and assumed a complicated and pretentious form which possesses no advantages and is full of inconveniences."—*Prof. Gillespie, Union College.*

"In New England, the science of arithmetic is taught backward, beginning with reasoning instead of observation ; and it is hampered with factitious difficulties, produced by a variety of *unessential* names and processes."—*Ex-President Hill, Harvard University.*

To restore arithmetic to its former simplicity, and to render its study easy and agreeable—

(1.) Omit from our books on this subject, or remand them to an Appendix, most or all of the following titles, which are little used in the *actual* business of life :—The English mode of numeration ; most contracted methods ; greatest common divisor ; true remainder ; different scales of notation ; proof by casting out the nines and the elevens ; continued fractions ; periodical or circulating decimals ; compound and conjoined proportion ; compound interest ; annuities ; modes of computing interest in other States and nations ; life and marine insurance ; general average ; stock jobbing ; arbitration of exchange ; alligation ; permutations and combinations ; duodecimals ; methods of analysis by position ; and all those parts which treat merely of curious properties of numbers. But, care should be taken to "retain and increase those parts which furnish commercial expedients, or are essential to a thorough preparation for the actual business of life." Says Prof. DeGraff : "As the majority of pupils leave school at the average age of twelve years, they should be drilled on the subjects which they will be obliged to use through life. They should be taught to solve problems they will meet in *real* life."

(2.) "Apply the formulas of mental arithmetic to the solution of questions in written arithmetic.—*Feller's Arithmetic.* "There should be no differ-

ence between the analysis of a problem in mental and written arithmetic."—*DeGraff*.

(3.) All mere *rote* teaching and learning should, at once, be abandoned. Long ago said Montaigne: "To know by rote is no knowledge."

(4.) Mere *rule* teaching should also be abandoned. Said Locke, two hundred years ago: "Nobody has made anything by hearing of rules, or laying them up in his memory. *Practice* must settle the habit of doing, without reflecting on the rule." Said Diesterweg, the great German educator: "In arithmetic, prescribed rules and formulas are to be entirely annihilated. No operation not understood in its reason should be performed or learned." Warren Colburn taught how many problems may be solved without having "learnt the rules." Said Horace Mann, who visited the German schools some years ago: "It struck me that the main difference between their mode of teaching arithmetic and ours consists in their beginning earlier, continuing practice in the elements much longer, and in requiring a more thorough analysis of all questions. *There were no abstract rules or unintelligible forms of words given out to be committed to memory.*"—*School Bulletin*.

JULIUS KATZENBERG'S "NUMERAL ILLUSTRATOR," BY BLOCKS AND SLATS.

THE numeral frame used in our primary schools for illustrating the first steps in the four principal rules of arithmetic, is rather complicated. The inventor of the "Illustrator" has produced something that will be comprehended by the infantile mind for which it is intended. Mr. Julius Katzenberg is a teacher of long and successful experience; he is now an honored member of our present (New York) Board of Education. Some of the reasons which led to its preparation, and which were the result of much observation, are thus set forth:

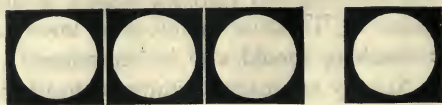
1. The numeral frame, now in use, violates a plain rule of teaching; that in speaking of one thing, one object only should be used, whereas it presents one hundred and forty-four little balls.

2. The size of the balls, too, is another serious defect, for being very small, and of various colors, they confuse and strain the eyes. A general shortsightedness that pervades the community, is due to improper practices in the schools.

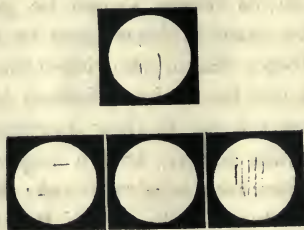
The "Numeral Illustrator" consists of a box of blocks and slats, which can be used separately or as the number to be illustrated requires. The first, or simple block or slat, is $1\frac{1}{4}$ inch square with a white circle 1 inch in diameter, inscribed within it, thus presenting on a black ground an object that can be seen in the largest class-room, without injury to the eye. There are slats with two such objects; slats with three, and so on, up to ten, and there are ten of each sized slats to complete the system.




They can be distributed among the pupils, and addition, subtraction, multiplication, and division can be practically illustrated at the start, for the amuse-

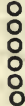
ment and interest of the children. Thus if it were necessary to teach the number four, a three unit



and a unit slat will exemplify it, having $3+1$, or by placing the unit slat after the three unit slat,



$=4$ or  Subtraction may also be illustrated in this manner. If we want to illustrate objectively the difference between 6 and 4, we take a 4 slat—
 and a unit slat  and having placed the latter upon the former, it then presents :

 and taking away 4, the difference at once appears. If two children divide four unit blocks, oranges, or apples between them, how many will each receive? The answer may be made objectively apparent. After the number is thoroughly understood, the sign or figure which stands for it, may be written upon the blackboard. There are nine units, and this is the figure 9, it stands for nine units, etc., etc.

Teachers will readily see how effectively the multiplication-table can be illustrated by piling up the slats and units. The square of each number can plainly be illustrated also. Many other amusing and instructive exercises may be practiced thus ; in how many ways can ten be expressed? By one ten ; 2×5 ; $3 \times 3+1$; 5×2 ; $2 \times 3+2+2$; $1 \times 5+1+3+2$; 10×1 . The author has written in pamphlet form numerous exercises for each number as they may be taken in succession. Many of the city teachers, principals, superintendents, President Hunter and others pronounce it a decided improvement. It is the intention of the inventor to have sets of smaller size printed for the entertainment of children at home ; it would form a most desirable toy for children in almost every house.—*New York School Journal*.

HE that studies books alone will know how things ought to be. He that studies men will know how things are.

LORELEI.

[From the German of Heine.]

BY GEORGE GOSSMAN, A. M.

MOTTO.—“Nothing is lasting but change; nothing fixed but death. Each stroke of the pulse strikes a wound in our hearts, and life would be but a gradual bleeding to death, were it not for the art of poetry. It supplies us with that which Nature deprives us of—a golden age that never corrodes; a Spring that never ceases blooming; unclouded happiness and eternal youth.”—*Boene*.

AH! what all this sadness presages,
That haunts my mind to-day,
With a legend of by-gone ages,
I cannot chase away!

The air is still and it is darkling,
And stilly flows the Rhine;
The sun on the mountain is sparkling,
Its mildest ev'ning shine.

I see a charming maid reclining,
So wonderful up there;
I see her golden jewels shining,
She combs her golden hair.

She combs it with a comb so golden,
And sings a song thereby;
And it sounds so like a song of olden,
Of wondrous melody.

The skiffman below is forgetting
The falls that are nigh;
A wild spell his heart is besetting
As he gazeth on high!

But I fear he 'll go to destruction;
Against the rock he 'll run;
And this by her song of seduction
The Lorelei hath done.

DIRECTIONS FOR TEACHING HISTORY OF
THE UNITED STATES.

BY JOHN SWETT.

1. HAVE the history lessons of the text-book read aloud in the class, but require pupils to memorize leading facts only.
2. Mark the important points in each lesson.
3. Of the early discoveries, mark three or four only.
4. Require pupils to learn about the four great centers of settlements—

Virginia, Massachusetts, New York, and Pennsylvania. The remainder belongs properly to *local State* history.

5. Fix in the minds of pupils the date of a few great events, and let the remainder take care of themselves.

6. The early Indian wars of the Colonies are of little importance compared with the great events of later date.

7. Require pupils to become familiar with the details of the history of the State in which they live.

8. Fix in the memory the *causes* and the *results* of the war of the Revolution, of 1812, of the Mexican war, and the war of Secession; but do not attempt to make pupils remember the dates of many battles.

9. Short biographical sketches of the great names in our history are both valuable and interesting.

10. Make use of the following formula :

Event.	{	What ?
	{	Where ?
	{	When ?
	{	Why ?
Result.		

WHISPERING.

BY E. H. BRADNER.

WHO has not tried ways and means innumerable for the prevention of whispering? And with what success? Many are the failures, while but the few have attained to satisfactory results. Among those who have failed we find one class who accept the situation as inevitable, and another who claim whispering to be a necessity in a well regulated school. For the sincere believer of this sort—with the majority such assertions are but an acknowledgement of defeat—this article has nothing of interest. But for the vast army of earnest, care-worn teachers, it is hoped a way may be shown, or at least useful hints given, by which this desideratum may be attained.

The doubtful or inexperienced have asked, "What is the great good of this attainment?" As experience alone is the real proof of the value of theory, I will give that only. Come with me into a school-room where my plan is in use. The teacher seems to exercise no surveillance over the school; his attention is given to the class before him; his back may be turned to the school, or he may step out of the room, but you hear no whisper, see no note passed, none of that worst of all communications to detect, the *on the sly*. A little one is restless and turns round in his seat, but his lips are sealed, and the mischief in his mind is not imparted to another. No pupil has his attention called from his studies by any word, and there is little left to do but to study. The intelligent visitor will see at once that all are kept busy by having enough

to do, and will notice that the tap of the teacher's pencil is a recognized monitor that some one is not at work or needs be reminded of a regulation. You ask the teacher if this is not "company manners," and are informed it is but the usual order, and that there are weeks at a time when he can truly say there has been absolutely no whispering in the school.

This seems a fancy sketch, perhaps, and you are skeptical. Let me relate my own experience, for I once had as little faith as any who may read this. I had already by my credit system reduced whispering to a minimum, but could not reach that done *on the sly*, when a sister urged me to try a plan by which she claimed to have stopped it entirely. I reluctantly consented to try it, believing there was more in the teacher than her plan. As is my custom with new plans, I told the school Monday what I wanted to try, and got their consent to make the trial. Success depends very much upon their willingness to co-operate with me, and there are often pupils who will "curl the lip" at any interference with their "rights," as did one of the older girls, particularly in this case.

The plan as explained to the children was this: "You are each to try your best not to whisper at all; if you find yourself doing so, stop right off without finishing; if another whispers to you place your finger on your lip, and at the end of the week I will give a paper to each one perfect, saying he has not whispered for the week. It will be hard work to do so at first, but we will come out all right if we *stick to it*."

Friday night came, and I called for the raised hands of all who had not whispered during the week. The result surprised me. *Not a hand was raised!* It seemed a failure; but I was not satisfied to leave it so, and told the school we would try it again next week. "Now," I said the next Monday, "every night I will call for raised hands, and as you are all trying your very best, we will start new every morning." That night about half the hands were up. I questioned each of the others: "How many times did you whisper? Did you whisper first? Did you stop right in the middle of a sentence when you thought of it? Are you trying your best to stop?" etc. Next day there was an improvement, which continued till every hand was up. It was some three weeks, however, before the girl referred to gave up, as it was not so pleasant having to be the only one nightly questioned. One thing feared was untruthfulness, and I have been surprised to find so little. But it is well to check any tendency that way by allowing a "challenge," if a pupil knows of falsifying, "for," I say, "we want this whispering business fair and square, and to make it so it is your duty as good pupils to show up any dishonesty." I use printed slips, now, gummed, to be stuck into the pupil's book, and neat little rewards for "Ten weeks perfect." Further information to those sending address.

All this requires no little time and patience at the *start*; but fellow-teachers, you can never believe what a relief is experienced from the every-day worry of your teacher-life till you try and prove a school can be made to "run itself," that it can be really self-governed.

Sacramento, Cal.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[San Diego County.]

CHAPTER VI.—THE SANTOS INSTITUTE—TEXT-BOOKS.

OF course it was a success, for everybody thought it would be a failure. Everybody asked everybody else if they had ever heard of such a thing before; and everybody else said they never had. Institutes cost a great deal of money. Every tax-payer will tell you that; but if you should say to him, "Yes, Mr. Tax-payer, the teachers especially are very heavily taxed by these institutes, and some way ought to be provided to lessen their expenses," I have no doubt you would surprise him. Then, if you were to go on quietly, and show him that the teacher's expenses for board are about double during Institute week; that she may have to pay her entire week's salary for stage hire, when it would not be a great deal of extra trouble for Mr. Tax-payer to make it convenient to go to town at that time and take her to and from the Institute; and that she must have a new bonnet and some new ribbons, if not a new dress, to wear at the Institute. After all these things were driven one by one into the tax-payer's head, he might begin to see that institutes are not taxes upon his pocket only, but that the teachers really pay the most of the tax of the Institute. In order to lighten this tax as much as possible, Ernest Silver, after consultation with the teachers of the county, determined to hold the Institute at Wild-cat, and to have, at the same time, a teachers' picnic. Each teacher was requested to bring a knife, fork, towel, and blanket. Tin cups, plates, and spoons, as well as provisions, were to be provided out of a general fund into which each teacher paid two dollars. This fund, it was expected, would pay all the expenses of board and lodging during the week.

The daily sessions of the Institute were to be held in the Wild-cat school-house. There were to be no night sessions. Night sessions are an imposition upon the good-nature of the teacher, and ought to be stopped. The teacher who spends six hours a day listening to methods of instruction, has little room left in the head for evening lectures. The ladies found accommodation at John Dean's new house, and the men encamped under a large tent set between there and the school-house. The surrounding cañons furnished an abundance of quails and rabbits, and one of the amateur hunters was so lucky as to kill a deer, so the teachers had an abundance of game to eat. The cooking—well, the ladies did the cooking, and if it was not always as good as might have been, the appetites were so keen and the company and surroundings so pleasant, that everything tasted very well. The brook furnished water for washing; and for drinking purposes, John had led the water of a cool spring which he found in a cañon near by, to the house.

The school-house had been greatly improved by the efforts of John Dean and his pupils. The outside had been covered with rustic and painted, the floor had been relaid, the windows put on one side of the house, and the

room supplied with patent folding-desks. The last had been purchased mainly by subscriptions paid by hauling the lumber of John's new house and the fencing around his lot, and by doing other work which John had to have done, such as plowing and harrowing.

The school-house was unceiled, as yet, upon the inside ; but the walls very nearly covered with green branches and home-made blackboards, book-cases, and cases for the school collections of rocks, shells, bugs, etc., helped to make the sides of the school-room look less bare. A few of John's pictures hung upon the walls "and made the room look quite like a parlor," sister Johnson said. Temporary benches for visitors were put around the room and were well filled during the Institute.

Squire Johnson, who had been elected county superintendent in September, attended the Institute very regularly, "to get accustomed to his position as a leader of educational thought," as the Squire remarked to John Dean.

There were twenty teachers employed in Santos County—eight men and twelve women. To each of these had been assigned at least one lesson, which they were expected to give before the Institute, to show a method of teaching that subject. This method was then criticised and discussed by the other teachers. The afternoons were mainly given to a discussion of school text-books—which of those in use it was desirable to retain, and which to change. Each teacher was invited to bring before the Institute any favorite text-book, and to explain its advantages and merits. Superintendent Silver had written to several book publishers and obtained copies of late readers, geographies, etc., which had been placed upon a desk, so that the teachers might examine them.

In the discussion of text-books, the teachers appointed to open the discussion were to give, 1st. A brief outline sketch of their ideal text-book ; 2nd. What text-book most nearly agreed with that ideal ; 3rd. Whether a change from the text-book now used was desirable.

The discussion of Histories was begun by Superintendent Silver on Monday afternoon. "Our histories," said he "are a disgrace to the intelligence of the American people. The school histories of the United States are filled with wars and battles. Indian fights, French wars, the war of the Revolution, the Mexican outrage, and the late civil strife—fill three-fourths of the pages of our school histories. How many were killed and wounded and taken prisoners in each slaughter is carefully recorded for the edification of the embryo peaceful American citizen. The one who was able to butcher the most of his fellow-creatures is lauded as a successful general, and the glories of war inflame the youthful mind, while the accompanying horrors are but faintly outlined. What we need is a history of progress—a story of the rise and advance of each nation to its present position in the line of civilization. This should be given in the higher geography, in connection with the map and accompanying text describing the country. We want to know about the people ; their environment ; what they believed ; their laws, food, clothing, houses, work and pastimes. Of the people whose names are to be remembered we want, not the discoverer of this little cape or river, or

the head butchers in that disgraceful struggle, but rather those who have added to our knowledge or helped us in our progress."

In conclusion, Mr. Silver said that he knew of no school history at all approaching his ideal, and he believed it better to omit the study of history from a text-book, and rely upon selected readings, than to use the text-book.

The teacher from Mountain District begged leave to say a few words about dates. He could never learn dates himself, and the learning of so many unimportant dates of discoveries and battles, of admissions of States and inauguration of Presidents, he regarded as worse than useless.

The school-mistress from Oak Valley thought that the Board of Examination ought not to ask for dates and such things in their questions on history.

Tuesday morning found all the teachers present at roll-call. This was due to the efforts of the superintendent, who had the getting-up bell rung at half-past six. From seven until eight breakfast was prepared and eaten, and there being no outside hindrances as in town, all the teachers were ready to begin work at nine o'clock. The forenoon and a portion of the afternoon were pleasantly and profitably spent in the regular work of the Institute, and then Prof. Cameron, the principal of the Santos City schools, took up the question of geographies.

"We spend too much time," said Professor Cameron, "in the study of geography for what we accomplish. Two text-books on geography are enough if we follow out the plan suggested by Superintendent Silver, and incorporate history into our geographies. Without the history one book would be sufficient. No intelligent teacher—and every teacher should be intelligent—wants the pages of map questions with which our geographies are padded; nor do they want so many maps of the different sections of the United States. A good map should always show the physical features as well as the political divisions. We will suppose that every school has a map of its district and the county. Then the geography should contain, in the order mentioned, maps of California, United States, North America, South America, Western Hemisphere, Eastern Hemisphere, Europe, Asia, Africa, and the World. These ten principal maps, with a few smaller maps of the British Isles, Australia, etc., will be enough to teach all the geography which pupils need learn from maps. The maps should not be crowded with details. Small towns, unimportant rivers, capes, bays, etc., should find no place upon our school maps. The meanings of the geographical names should accompany their pronunciation in the back part of the book. In the larger book, if two are used, politics should receive considerable attention. We talk to the larger boys about republics and kingdoms, but they know very little about those things on which they will soon be called to vote. The principles of government are, or should be, the same in the family, the school-room, or the State. Honesty and justice, law and forbearance, are the same, whether practiced by an individual or by a nation."

The merits and demerits of the different geographies were then discussed, and the Institute finally decided that it was best to drop the present text-book on geography, and adopt Bacon's two books, if Bacon would put a map of

California, with accompanying text in both books as had been done by Monteith.

Mrs. Strong of Laguna District made a strong plea in favor of Johnson's Readers, which provoked considerable discussion. Mr. Silver said that he would like to see more lessons in script than were in any readers he knew of. Besides, he thought it unwise to attempt to find sounds by analysis, as it was done in Johnson's First Reader. John Dean said that composition, grammar, word analysis, and spelling ought to be taught in connection with the reading lessons, and that readers should contain graded lessons in these studies. Johnson had begun composition work in a very nice way, but the exercises in grammar and word analysis were too few, and amounted to almost nothing. Spelling was handled very well, but until we adopt the new spelling, he hardly thought it wise to pay so much attention to diacritical marks. Mr. Cameron spoke of the subject matter of the reading lessons. He thought pieces for the Third and Fourth Readers should be selected either for their literary beauty or for the scientific information which they conveyed. Lessons on hygiene, animals, plants, true stories of the intelligence of animals—these should take the place of the trashy stories which filled our readers. He did not think there should be any Fifth or Sixth Readers. When the pupils had advanced that far, let them read the newspapers and selections from standard writers. Mrs. Wright of Rincon District thought that you could not find worse trash, even in the worst readers, than they put into the daily papers. She condemned the practice of "translating" writers like Shakespeare, when selections were put into our readers. Why not preserve the original words and spelling? Pupils liked to see the quaint old-time spelling. Much more of interest was offered by various members of the Institute, and then, passing a resolution in favor of Johnson's Readers, they adjourned until the next morning.

On Thursday afternoon John Dean opened the discussion of Arithmetics by saying: "We spend a great deal of time upon arithmetic, and yet we turn out poor arithmeticians. Part of this is, no doubt, due to the books we use. We really need but one book of arithmetic, for all the primary work should be given, without a book, by the teacher. But suppose we have two books. Then the primary arithmetic should contain only the addition, subtraction, multiplication, and division of simple numbers. No fractions, compound numbers, or percentage should find a place in this book. No answers, no rules, no explanations should be put in either book, but an abundance of properly graded examples and problems arranged in proper order. When the pupil had finished this primary book he should be able to add, subtract, multiply, and divide rapidly and accurately, and he should be able to tell, with a reasonable certainty, when to do each operation in simple problems. Problems involving two or more operations should not be given until near the end of the primary arithmetic. In the higher book they should omit three-fourths of the tables of compound numbers, much of the work in percentage, all of duodecimals, cube root, and perhaps arithmetical and geometrical progression. The problems should be so arranged that when the pupil has mastered one,

he will be mentally capable of doing the next. At United States money they should introduce a practical, easy system of book-keeping, which should be continued through the arithmetic. The pupil would need but one blank-book—a ledger—opening a cash account first, then a loss and gain account, and then bank and personal accounts. A system of double entry book-keeping, that would answer every need of nineteen men out of twenty, might be taught in connection with arithmetic, and both studies take up very little more time than arithmetic alone. Mensuration of surfaces should be put where it belongs—with square measure; and mensuration of solids, including board measure, with cubic measure.”

He knew of no arithmetics approaching his ideal, and he believed our present books should be continued in use. But space forbids the telling of one-fourth of the wise and otherwise suggestions made at the Santos Institute; but at the close all agreed that they had never enjoyed so profitable an Institute before. “It was a feast of reason that we of Wildcat are most grateful for,” said the Squire, “when I occupy the high and exalted position to which I have been called by the suffrages of the people, and which Professor Silver now graces, it will afford me great delight to give some other district the same chance for an intellectual feast as has been afforded us.”

And the Santos Institute picnic was over.

OBJECTIVE METHOD WITH GEOMETRY.

PRACTICAL LESSONS IN THE HIGHER GRAMMAR GRADES.

BY J. F. KLENCK,

[Professor Mathematics, San José High School.]

EVERY material object, *i. e.*, every object perceptible to our senses, occupies a definite portion of space. Of such objects as surround us in the schoolroom, we may mention books, globes, pencils, etc. Besides, space empty at the present moment may be conceived as being occupied by some object; for instance, we may imagine a ball, cube, or something else to fill some space on the table in this room. A portion of space actually occupied or conceived as being occupied is called in geometry a *solid*.

Mention all the geometrical solids actually found in this room, and some which have only an imaginary existence here at this moment.

Nearly all objects surrounding us in this room have different *forms*. Give examples of objects having the same form; also examples of objects having different forms. Have all marbles the same form? All pencils? How does the form of a cube differ from that of a ball? From that of a slate pencil? The form of an object is exactly like the form of the space occupied by such object. Hence, form is a property of all geometrical solids.



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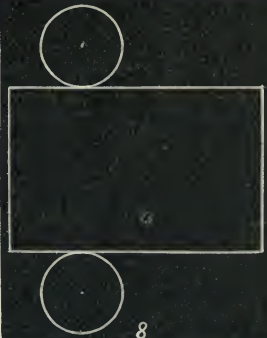
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Every material object, even the most minute, invisible to the unaided eye, has *size*, or *magnitude*, and by virtue of this property it extends in three different directions, at right angles to one another. Illustrate on a box or some other convenient object. These three extensions are called *length*, *width*, and *thickness* (height or depth). The space occupied by a material object has the same size, or magnitude, as the object itself, and therefore length, width, and thickness are in both instances exactly the same. Length, width, and thickness of a geometrical solid are collectively termed its *three dimensions*. Size, or magnitude, is the second property of all geometrical solids.

The properties form and magnitude, as we have learned, are precisely the same in a material object and the space filled by it; and as geometry in its investigations considers no other properties, as weight, color, odor, etc., the objects themselves are generally regarded and treated as geometrical solids, and as the study is thereby greatly simplified, we shall follow this system in these pages.

At the very beginning of this study, the class should be provided with a complete set of common regular geometrical solids of large size. Without the use of proper objects for illustrative purposes, geometrical instruction will prove a failure, and particularly with a class of young beginners. The following figures give the outlines of all solids required, with the exception of the sphere. Good pasteboard is the best material out of which they may be made.

Fig. 1, regular tetrahedron; Fig. 2, regular octahedron; Fig. 3, cube; Fig. 4, dodecahedron; Fig. 5, triangular prism; Fig. 6, triangular pyramid; Fig. 7, frustum of a pyramid; Fig. 8, cylinder; Fig. 9, cone; Fig. 10, frustum of a cone.

(A cube is shown to the class.) How many sides has the cube? A side is called a *face*, and all six sides together the *surface*, which forms the boundary of the cube. How long is a face of this cube? How wide? How thick? Each face, and consequently the entire surface, possesses but two of the three dimensions, namely, length and width.

The surface of a cube being entirely composed of flat or plane faces, is called a *plane* surface. The pupils will mention several objects, each of which is bounded by a plane surface.

Observe the surface of the globe. It has no distinct parts or faces. It is regularly and uniformly curved. Now observe the surface of this cylinder. It is composed of three parts. The ends, or bases, are flat, and the part between them is regularly curved in one direction. A ball rolls in any direction, for it is regularly curved in all directions; a cylinder rolls in but one direction, and a cube does not roll at all, because its surface is not curved. Thus it will be noticed that surfaces are of two kinds, namely, flat, or plane, and curved.

The class should next compare the form and number of the faces of a cube with those of a triangular prism, and extend this process of comparison to other solids, and thus learn that the form of a solid does not depend on the size of the faces, but that it is entirely governed by their number and form.

Faces are only found on solids; but, for the purpose of study, they may

be conceived as separated or abstracted from them, and represented by drawings called figures.

Let a face of a cube and pyramid, the base of a hexagonal prism, and also that of a cylinder be represented by appropriate drawings on the board. A face of a solid is represented by drawing its boundary lines. A face of a cube, called a square, is bounded by four equal straight lines. A face of a pyramid is bounded by three straight lines, which may or may not be equal. The base of a cylinder, called circle, is bounded by a uniformly curved line. Consequently, there are two kinds of boundaries of plane faces, *i. e.*, two kinds of lines, namely, straight and curved. A line is called *straight* when all its parts lie in the same direction, and *curved* when it is continuously changing it. A line on a solid is called an edge.

How long is the entire boundary line of the cube? Triangle? How long is each side? How wide? How thick? How many dimensions has a line? The extremities of a line are called points. A point has no dimensions whatever; it indicates place.

Solids, surfaces, and lines are collectively termed geometrical magnitudes.

Geometry is the science which treats of the properties, measurement, and methods of representation of geometrical magnitudes, and is naturally divided into three parts, viz: Geometry of Lines, Geometry of Surfaces, and Geometry of Solids; but the first, on account of its limited extent, is generally regarded as a branch of the second, and thus we have but two divisions—Geometry of Surfaces or Plane Geometry, and Geometry of Solids.

EDITORIAL DEPARTMENT.

A NEW-YEAR'S GREETING.

WE stand on the threshold of another year with regret for the Past softened by hope for the Future.

The flight of time! how much has been spoken and written on that theme! This holiday season—Christmas and New-Year day—is a living reality to us all. Yet how few reflect that these dates have been arbitrarily fixed; that Christ in all probability was not born on the 25th of December, and that eighteen centuries ago, the New Year began in March. But custom is a strong master; and in the eyes of all mankind, there is a line strongly drawn and clear between the last day of the old and the morning of the new year.

There must be some strange yet potent virtue in the day. We have all made resolves that to-morrow—the New-Year—some old, bad habit shall be broken off; we will be more industrious; more conscientious; better in every way. We sigh

when we think how often such vows have been made and how often broken. Yet have not we been improved in making them ?

So the day is to us all what Mother Earth was to Antaeus, a healer and strengthener inciting to fresh effort, encouraging to a higher, better life.

The JOURNAL has a great work laid out for the year which dawns to-day. What that work is, every one conversant with the average American common school well knows. To secure more intelligent, less mechanical instruction ; to introduce the best methods of teaching ; to improve our school organization ; to raise the standard for admission to the educational ranks ; to obtain once more and forever, State recognition of teaching as a profession. These are the objects for which the JOURNAL has its being. The task is herculean and not to be achieved single-handed. Relying on the sympathy of all true teachers, depending on their hearty and active coöperation, we address ourselves to our task, with a cordial New-Year's greeting to all our friends.

A THOUGHT ON THE SALARY QUESTION.

THE prevailing "hard times" have seriously affected our schools. It is indubitable that the present stagnation in every department of commerce and industry, has been unexampled in the history of this State. The harvests were not meagre, the mountains yielded a fair quantity of the precious metals, yet money is scarce, labor in excess of the demand, and improvements of every kind at a standstill.

We constantly hear it said again and yet again, that our people are devotedly attached to our public schools. It is claimed that they hold these schools as the very apple of their eye—that they are willing to give their all to make them excel in every essential detail.

No one believes that good schools are possible with ignorant, inefficient teachers. *And good teachers cost money.*

So, we confidently ask, how fond of this free system of popular education are the people of California ?

If the press of the State is a fair index of the sentiment of the people on the subject of schools and teachers and teachers' salaries, then we confess ourselves unable to reconcile the contradiction.

Can a good female teacher be had for less than a servant girl's wages ? Can a good male principal be made to work for less per day than is paid an average carpenter or the foreman of a printing-office ?

Do the people of California want good male and good female teachers ? Put these questions against the recent general reduction of teachers' salaries throughout this State and the further reduction contemplated, and we confess ourselves puzzled. Do our people love the free schools ? Times are hard, true. Let us see what sacrifices have been already made to meet them.

First, teachers' salaries reduced. This is always first. Second—second—second. There is no second. What ! teachers' salaries all ? No people in the world spend comparatively so much money on food and drink : has not that been reduced ? None are so extravagant in clothes : has not that been reduced ? None pay such high rents : has not that been reduced ? None are so heavily taxed to pay for the bauble called self-government : has not that been reduced ? Not one of these items has been materially changed from the flush times of ten

or fifteen years ago, save the salaries of teachers. The masses wear about the same clothes, eat the same food, (and better food it is than could be obtained by them anywhere else in the world,) buy the same books, and expend very nearly the same amount of money as they did before the stress of hard times compelled them to economize—by cutting down the salaries of teachers.

We wonder if the sensible people of the State are not yet sufficiently tired of this cant about overpaid teachers and economy in school management.

It is nearly all pure humbug, adulterated only with craft sufficient to distract the public attention from evils that really need righting.

When the daily or weekly newspaper gravely and earnestly informs its readers that "times are very hard, and economy is imperatively necessary," let the man whose children are growing up to future citizenship, whose interests are identified with the growth of a race of intelligent and liberty-loving citizens, let that reader act on the advice gratuitously tendered him, by economizing on the newspaper which gives it, and cheerfully increasing his school-tax by the amount of his subscription.

A GENERAL INVITATION.

TEACHERS and superintendents are respectfully requested to consider the pages of the JOURNAL, at their disposal for the discussion of educational and other subjects. We invite articles from all interested in education; and trust no one who has a suggestion to make, a new method found successful in his own practice, or an opinion on any topic presented in our pages, will hesitate to bring it forward. We want the best possible variety of matter combined with the greatest excellence.

Our standard has been set high; to reach it we must have the active and cordial aid of all our teachers. Correspondence is solicited. Let teachers from each county inform us of the condition of their own and neighboring schools, of improvements in school organization, and progress generally.

In education, as in some other things, we teachers are too apt to settle down in a rut, to go along contentedly, and—must we say it?—lazily, and end by finding ourselves far behind the rest of mankind.

We hope the teachers of the Pacific Coast will not get into such a condition. They have every incentive to be active and improve. Their calling is respectable and respected. The recompense for their toil (though never what it should have been and even less now than ever before) is still much greater than that of their professional brethren elsewhere in our country.

The danger to our system and to our profession lies greatly with ourselves. If we give our patrons their money's worth, they will never complain. One hundred cents on the dollar is what the people demand, and what our conscience says—give.

So among other evidences of an educational "boom," we hope to hear from teachers everywhere. If you can tell us nothing more, let us know how you get along in your position—your difficulties, and how you overcome them; your success, and how you attain it. We are very much in earnest when we ask you so urgently—write.

OUR ASSOCIATE EDITORS.

OUR readers will probably notice on the title-page of the JOURNAL a new list of Associate Editors. The gentlemen whose names appear are nearly all known beyond the borders of our own coast. An introduction is scarcely necessary. Mr. Campbell has been promoted from the Oakland department to the State office of Public Instruction. Dudley C. Stone has served for four years as deputy city superintendent, and has been reappointed by Supt. John W. Taylor for the coming term of three years. Mr. Stone's fourteen years in Marysville, three years in Berkeley and Oakland, two years in our Girls' High School, his appointment and reappointment as deputy superintendent, tell those who have not the constant pleasure of his personal acquaintance that he is a genial, kind-hearted gentleman, a thorough scholar, and an educator in the highest sense of the term. Mr. Gilson is one of the most progressive men on the coast. He is a man who if let alone for a few years, will show us the "Quincy Method" in California. Prof. D. T. Stanley is connected with the Christian College at Monmouth, Oregon. He has been spoken of in the highest terms by eminent authority in his State both as educator and man. We look forward to the time when we can make his personal acquaintance. Supt. Sherman is personally unknown to us, but the work he is doing in Arizona to establish a substantial, enlightened, and progressive system of public schools, shows him the right man in the right place, and one whom we are proud to number among our associates. Henry F. Baker, at present principal of the Gold Hill High School, is spoken of in the highest terms as an active, intelligent, and progressive teacher, with abilities of the highest order. The interest he has already aroused in Nevada, shows he has the respect of the great body of the teachers of that State. In speaking of Prof. Henry B. Norton of the State Normal School, we scarcely know where to begin and where to end. He is emphatically—*the coming man*. Conscientious, cultured, earnest, eloquent, we sometimes feel as if we were twenty-five years younger when we hear his lips drop words—sweeter than honey yet stronger than a lion. No California reader will consider this introduction too warm for Henry B. Norton. J. M. Guinn of Anaheim is in many respects a man of the same type as Prof. Norton. He is outspoken, strong in mind, despises shams, and will not be imposed upon by pretenders. Original in thought and expression, we feel a lasting pride that this JOURNAL should be the medium through which such men may communicate with their co-laborers. While these names, eminent though they be, add no additional respectability to the JOURNAL, they are, yet, some guarantee that our work will not retrograde; and that, with their aid, the teachers of the coast may confidently hope to see the JOURNAL inferior in no respect to any modern publication of its kind.

TO SUBSCRIBERS.

IT is hardly necessary to remind subscribers that a new year has commenced, and that, on account of the many visible changes and improvements in the JOURNAL, remittances will be very acceptable. We hope that when they send the amount of their subscription, they will likewise secure that of their district and as many more as they can obtain. At all events, we trust to hear from subscribers in nearly every county on the Pacific Coast.

NOTICE OF REMOVAL.

THE editorial rooms of the JOURNAL have been removed to 838 Market Street, a pleasant location. Here, the editor will always be pleased to see superintendents and teachers from the interior, as well as from the city. It is designed to make this a headquarters for teachers. They will find here the daily and weekly papers, the monthly magazines, and the various educational periodicals of the United States and Canada.

The editor's office hours are from 3:30 P. M. to 6 P. M. daily. Prof. O. S. Ingham, superintendent of Alameda, and our assistant editor will be in the office Tuesdays, Thursdays, and Saturdays, from 10 A. M. to 4 P. M. Mr. J. A. C. Palmer, assistant editor, will attend to the office daily from 9 A. M. to 4 P. M.

A cordial invitation is again extended to all interested in education to make frequent use of these rooms. All communications, postal orders, etc., intended for the JOURNAL, must be addressed to the publishers, ALBERT LYSER & Co., 838 Market Street.

THE MEETING OF THE STATE ASSOCIATION OF TEACHERS.

WHILE we write, the annual session of the Association of Teachers of California is being held in Lincoln Hall in San Francisco. The meeting this year is a complete success. Never before has there been so large a gathering of representative educators. From Humboldt County on the north to San Diego on the south, nearly two-thirds of the counties in the State are represented.

The reduction in fares secured with great difficulty, and after much discussion—by the efforts of State Superintendent Campbell, was but one cause of the great attendance. The teachers feel that this is an important time. Thus far the discussions at their sessions have been marked by courtesy, patient attention, and a full expression of opinion. To the Executive Committee, especially to Messrs. Mann of San Francisco, McChesney of Oakland, and Augustine of Marin, great credit is due. To those who prepared for the meeting of the different sections and so ably and acceptably preside over the work—Prof. C. B. Towle of Vallejo, and Silas A. White of San Francisco—too much praise cannot be awarded.

We believe that no one, in California at least, will accuse us of egotism, when we claim that some small share of praise may properly be awarded this JOURNAL also.

Among the four hundred teachers present, are some from the State of Nevada—Supt. C. S. Young of Virginia City, an accomplished gentleman, enthusiastic and able; Mr. Booher of Gold Hill, who has a bright record for success within the school-room and eloquence without.

From California, the whole host of regular contributors to the JOURNAL—with the solitary exception of Drake of San Diego, are present. Thus far we have had excellent papers from President LeConte, Prof. Guinn, Prof. Sill, and Prof. Anderson.

The Association, by a unanimous vote, resolved to have the proceedings published. So with our February number, we expect to issue an extra, containing a list of those who attended, together with a full account of the proceedings of the third annual session of the California Association.

ABSENT.

WE were sorry to miss among the attendants at the State Association this week the familiar faces of Morse of Siskiyou, Casterlin of Humboldt, and Becket of San Luis Obispo. Morse and Casterlin we know could not come, for the recent storms must have made traveling very difficult, if not dangerous, in their respective jurisdictions. Knowing Mr. Becket, we believe he had some equally good reason for staying away.

NEWS RECORD.

Foreign and Domestic.

OUR record closes on December 30th.

President Hayes has nominated Secretary George W. McCrary as Circuit Judge of the Eighth District, and Alexander Ramsey of Wisconsin to succeed him as Secretary of War. Congress met on the 1st of December. The winter has been exceptionally severe throughout Europe and the western coast of the United States. In California the cold has been more extreme and more continuous than ever before within the memory of any American settler. Senator Cameron of Pennsylvania, has been chosen Chairman of the National Republican Committee. Chicago has been chosen as the place for holding the next Republican National Convention, and June 3d fixed upon as the time. The excitement through the west of Ireland shows no sign of abatement. Pancho Jimenez, the most influential insurgent chief in Cuba, has surrendered. Active operations have been resumed in Afghanistan, and several battles have been fought; the British, in the last, thoroughly defeated their opponents. An attempt was made to assassinate Lord Lytton, Viceroy of India, at Calcutta. The war between Peru and Bolivia, and Chili is still in active progress. The Chilians have been victorious in several pitched battles, the last of which, at San Francisco, is thought decisive. Rev. I. S. Kallock was inaugurated Mayor of San Francisco on the 2d of December. General George Stoneman, now living in Southern California, has been appointed Indian Commissioner by the President. There is a serious political quarrel in Maine; the Governor Garcelon has countenanced the counting out of republican representatives to the State Legislature on alleged technicalities, and thus given a majority to democrats. The Supreme Court of the State has decided against him.

Personal.

Speaker Berry has appointed Congressman Page of California, Chairman of the House Committee on Education and Labor. Gen. Phil. Sheridan will accompany Grant to Mexico this winter. Epes Sargent of Boston, the school-book writer, is seriously ill. John Hay of Ohio, formerly private secretary of Lincoln, has been appointed Assistant Secretary of State by the President. Dr. Howard Henderson, State Superintendent of Public Instruction of Kentucky for the past ten years, has assumed the pastorate of St. Paul's M. E. Church South in this city. The Swiss Confederation have elected Dr. E. Welti of Aargau president for 1880. Dr. Foerster of the Berlin Astronomical Observatory favors the decimal system of dividing and computing time as not only easily acquired, but of great practical value.

Educational.

The first female school-teacher in California is said to have been Mrs. Olive M. Isbell, who, in the months of February and March, 1847, at Santa Clara Mission, in Santa Clara county, taught the families that were stationed there while Colonel John C. Fremont, with a company of about four hundred men, went to take possession of Southern California. She

taught in an old adobe stable for a school-house, with a hole in the roof for a window, getting two dollars a month per scholar. There are several persons living in Southern California who were her pupils—for instance the wives of Dr. Ord and P. Y. Cool. The lady is now fifty-four years old. This pioneer teacher, whose hairs have grown white, still seems as fresh and cheerful as though she was yet in her teens.—*Ventura Free Press.*—

Fifty-seven of the voting students of Wooster, Ohio University, waited upon the local authorities with picks and shovels, to work out their poll-tax on the public street.—

An English school-master was among the arrests of suspicious characters for suspected complicity in the recent attempt to assassinate the Czar.—By the recent action of the Board of Education of Maryland, the school-teachers of that State will hereafter hold their positions during good behavior, nor can they be removed, even for cause, except after a notice of thirty days.—

A College of Oratory has been opened in New York City.—

Students attending the Vienna Technical high school have become so turbulent and unruly that it is feared they will temporarily close school.—

In the London public schools the average expense of each pupil has risen from \$11.25 in 1873 to \$14.25 in 1879, due mainly to the annual increase of the salaries of the teachers; but the Government has increased its grant from \$2 to \$4 for each child, while the net cost has remained for six years about \$13, so that the London tax-payer has not been put to any additional expense, although the teachers and the schools have both gained by the economy of the public money used in building and furnishing the schools.—

The trustees of the Peabody Fund last year appropriated \$74,850 in aid of the schools in the Southern States. The amount available for the coming year is \$83,000.—

The expense of conducting the Philadelphia schools during 1880 is estimated at \$1,550,195.01. Of this sum the salaries of the teachers form the larger part, \$1,096,047.50.

A new member of the St. Louis School Board is quoted as making a novel objection to German instruction in the public schools. He thinks that the present system will end in making every teacher in St. Louis a German, as it demands a condition which can only be met by Germans—a thorough knowledge of the German language.

A Paris correspondent reports that two French explorers have discovered the source of the river Niger.

M. Jules Ferry, French Minister of Public Instruction, speaking at Lyons, said that the Ministry would accept no compromise on Clause 7 of his Educational Bill.

In Melbourne, Victoria, Bishop Moorhouse has created a sensation by heading a deputation to the Minister of Education to urge the teaching of the historical events of the Bible in the public schools.

Dartmouth College has a library of 56,000 volumes.

Virginia has 2,491 public school-teachers, and 108,074 pupils.

The California Supreme Court having rendered their decision in regard to the Lick Estate, it may be of interest to restate that among the educational bequests which will now be immediately awarded and applied is one of \$700,000 for an observatory on Mount Hamilton, \$540,000 for a San Francisco School of Mechanic Arts, and \$10,000 to the San Francisco Mechanics' Institute for the purchase of scientific and industrial books.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

TULARE COUNTY.—ED. JOURNAL: If you consider the following items concerning Tulare County of general interest you will please publish. I believe I have never yet seen this county mentioned directly in the JOURNAL: This county has, during the last five years, increased wonderfully in importance in every respect. It has a school population of more than 3,000, divided among more than seventy districts, and taught by more than eighty teachers. It has one school employing five teachers, one employing three, and three employing two. Although it is called a *cow county*, its people will compare favorably in general intelligence and social culture with other favored localities of the State.

—The teachers were convened in Institute on the 1st, 2nd, and 3rd of December. There were about seventy teachers in attendance, and the exercises were generally of an interesting character. Mrs. Becker read a very interesting essay; subject, "Teaching

Too Low a Calling." Miss Mills' essay was also excellent; subject, "Government." Prof. H. B. Norton of the State Normal was present two days, and edified the teachers of the county and the people of Visalia in a very pleasant manner with much useful and practical instruction. Mrs. Carr was present one day, and gave such practical and beneficial instruction, as no one can give better than she. General good feeling and pleasantness prevailed throughout the proceedings, and most of the teachers present feel that the time was profitably as well as pleasantly spent.—Several teachers from this county will attend the coming State Teachers' Association—C. H. Murphy of Tulare for one.

SAN FRANCISCO.—The new Board of Education of this city organized by electing Ex-Postmaster N. B. Stone as President.—The Chairman of the Committee on Credentials is L. H. Van Schaick.—One of the first acts of the Board (by a vote of seven to five), was a general reduction of the salaries of teachers. The amount of the reduction is about ten per cent. on the entire pay-roll; but it unfortunately bears most heavily on those primary and grammar school-teachers whose salaries have already ranged lowest.—Among the changes made in the office of the Board was the removal of Mr. C. A. Clinton, and the election in his stead of Mr. A. P. Peck. We regret this action, as Mr. Clinton was universally esteemed as a good, faithful official, and a courteous gentleman.—On Monday, January 5th, Mr. John W. Taylor assumed the duties of the City superintendency.—At the semi-annual examination of first grade pupils for the high schools there were but eight promotions; three boys and five girls.—The evening school-teachers of the department marked the Christmas holidays by presenting a handsome silver tea service to Principal O'Connor. This was a well-earned tribute to Mr. O'Connor's untiring and efficient service in advancing the evening schools.—In the evening schools popularity is more certainly based on merit than in any other part of the department. This is generally noticed about Christmas time, when the ablest teachers are kindly remembered by their pupils. J. London and H. C. Kinne, two of the best teachers in the San Francisco schools, were the recipients of fine presents from their evening class. Mr. London received a fine gold watch-chain, and Mr. Kinne a splendid gold-headed cane.—An excellent measure passed by the present Board is a resolution requiring principals to report all incompetent assistants. It has one slight drawback, however; who is to report incompetent principals?—The special teachers of German and French have been dismissed from the Valencia Grammar School; we suppose the number of pupils studying those languages has so decreased in that school as to necessitate the discontinuance of instruction therein.—A fine twelve-class building on Tyler Street near Hyde is nearly completed. It is designed to be occupied by the classes of the Market and Seventh Street School, Miss Stincen, principal.—What this department now needs, most urgently, is a good normal and training school, with at least a two years' course. Mr. Swett has done what no other man could have attempted, organized a good nucleus in the normal class of the Girls' High School; but a separate institution is now really required.—The Yale College Alumni residing in San Francisco gave their third annual dinner at the Palace Hotel on the 11th ult., J. S. Bacon presiding. Among the guests were Prof. E. R. Sill, Prof. Davidson, Prof. M. Ashburner, and others. "College Men in Business," "Explorations by the United States," and "Creation of Wealth by Science," were the most æsthetic toasts.—The St. Joseph's Educational Society gave a very successful entertainment on the 10th to raise funds to pay the teachers of the parochial free schools in this city, which are attended by over 1,700 children.—Prof. W. J. G. Williams is principal of the St. Joseph's Grammar School. Under his very efficient management the pupils have made excellent progress, and the school ranks higher than ever before.

ALAMEDA COUNTY.—Mr. C. H. Clement, principal of the Cole School, was elected to the Oakland City Superintendency *vice* F. M. Campbell; and Mrs. Clement takes Mrs. Campbell's place as Deputy superintendent.—The Oakland teachers, with a few invited guests, gave Mr. and Mrs. Campbell a farewell reception on the evening of Jan-

EDUCATIONAL INTELLIGENCE.

uary 2d. The chief feature of the evening was the presentation of a handsome gold watch and chain to Mr. Campbell, and a silver tea service to Mrs. Campbell.——Mr. B. F. Fowler, the recently elected principal of the Prescott School, is doing splendid work, and rapidly bringing his large school to the level of Oakland's best.——Mr. J. W. Redway of Pescadero, San Mateo County, is assisting Superintendent Gilson of this county, in preparing school cabinets. Mr. Gilson is putting into effect some original and very valuable ideas in regard to school cabinets, containing raw and manufactured materials. There will appear in an early number of the JOURNAL, a full account of the contents and design of school cabinets of this kind.——The Porter School-House is to be improved and repaired.——The new public school building at Berkeley is to be called the Kellogg Grammar School after Prof. Kellogg of the State University and President of the Berkeley Board of Education.——The Berkeley Gymnasium gave their first musical and literary entertainment on the 11th.——The University of California students gave their annual ball on the 17th.——San Pablo Avenue School has been renovated and repaired.

SACRAMENTO COUNTY.—F. L. Landes, late County Superintendent, was elected early in December, City Superintendent of Sacramento.

PLACER COUNTY.—Mrs. Cornelia Haile, former principal of the Susanville (Lassen County) school is teaching at Dutch Flat.

LASSEN COUNTY.—Miss Maggie Ford has charge of the public school at Johnstonville.

MONO COUNTY.—Are there no schools in Bodie? We never see any allusion to them in the *Bodie Standard* nor *The Free Press*. Nothing but stocks.

LAKE COUNTY.—The new school-house of Lower Lake, Lake County, cost \$11,000, and is one of the finest in northern California.

SAM DIEGO COUNTY.—Last month the San Diego City public school pupils discussed the question of a railroad to that place. Pupils with names running from A to O assumed the affirmative and those from O to Z the negative.

BUTTE COUNTY.—Mr. Geo. W. Oman, formerly teaching at Truckee, has been placed in charge of the Biggs Station school.——Chico has voted in favor of building a \$2,000 school-house.

SAN JOAQUIN COUNTY.—A two-story brick school-house has recently been completed in Athern school district.

SAN MATEO COUNTY.—St. Matthew's Hall Military School at San Mateo closed its Trinity term on the 10th ult., with an exhibition and award of prizes.

SUTTER COUNTY.—Supt. O. E. Graves, and Mr. J. G. McMillan represented this county at the State Institute. Superintendent Graves took a deep interest in all the proceedings, but was unfortunately called away early in the session on account of the illness of his wife.

MARIPOSA COUNTY.—The Madeira school was successfully taught by Miss Julia Jones the past season.——Mr. W. L. Smith and Miss Lucy Jones have charge of the Mariposa school, which evidently has some lively pupils, judging from the *Gazette*, which says: "It is to be hoped that during vacation the teachers will acquire sufficient strength, muscle, and determination to settle some of those 'branches' who as yet are not bridled-wise."

SANTA CRUZ COUNTY.—An active and progressive member of the Santa Cruz City School Board is a lady—Mrs. Boston. She is an admirable member.——Prof. W. W. Anderson, principal of the Santa Cruz high school, was the representative to the State Association from this county. Prof. Anderson read an able paper on "Country High Schools" before the high school section. This paper will be published.——Among those visiting the JOURNAL office the past month was M. J. H. McEwen of Watsonville, who will pass the winter and spring at Sumner, Kern County.——The last meeting of the County Board of Examiners awarded second-grade certificates to H. E. Jenne and Miss Mary Bliss; and third-grade to Misses Lucy Rodgers, B. Boynton, Nettie Harvey, Mollie Givens, and Mrs. M. C. Jenne.

SANTA BARBARA COUNTY.—Prof. Thomas Edmunds of the Lompoc school has obtained a short leave of absence, on account of ill health, to visit the Sandwich Islands. He promises to write to the JOURNAL an account of educational matters there.

SAN BENITO COUNTY.—Among the most intelligent and able superintendents with whom we were brought in contact at the last meeting of the State Association, was J. N. Thompson of this county. In the superintendent's section he explained an original method of apportioning the school-funds, which we believe the most equitable and best yet devised. It will probably be given in the February JOURNAL, and we hope to see it incorporated in the new school-law.—Among the teachers from this county present at the State Institute, were Messrs. G. W. Housh and P. W. Black, both well-known and excellent teachers.

TEHAMA COUNTY.—We had the pleasure of meeting Prof. A. W. McCoy, of this county, at the State Institute. Prof. McCoy has not taught during the past year, having been compelled to abandon the profession for the present, at least, on account of hemorrhage of the lungs. His interest in education continues unabated, and at the association he took an active part, being Chairman of the Committee on the Profession of Teaching.

COLUSA COUNTY.—This county was well represented at the State Association in the person of the able veteran superintendent, Samuel Houchins, Messrs. W. H. Reardon and Hayman. These gentlemen are all noted for their stature, not physical only. Of Mr. Hayman we heard it related that the political leaders opposed to Mr. Houchins asked the latter, who was the strongest and most popular teacher in the county of the opposite political faith. He answered, "Mr. Hayman;" so Mr. Hayman was nominated against him, made an active, but honorable, manful canvass, was beaten, and now is on Mr. Houchins' Board of Examiners, with a strong, mutual respect never for a moment interrupted. This is as it should be.

MONTEREY COUNTY.—School Supt. McCroskey of Salinas, while horseback riding, was severely injured by the animal falling a few weeks since.—Cypress trees have been planted on the Castroville School grounds.—Mrs. Ford's Young Ladies' Seminary at Santa Cruz has passed into the hands of Mrs. J. Gamble, formerly of San Francisco.—Mr. Bercoe, a well-known teacher, has gone East to Ann Arbor College.—Miss Carrie Kilder, of the Clealone district school, is very highly spoken of as a teacher by the Monterey papers.

SOLANO COUNTY.—Mrs. Georgiana Horsely, an ex-teacher in Mrs. Lynch's Seminary, Benicia, has sued Episcopal Bishop Rev. J. H. D. Wingfield for \$20,000 damages for slander.—Mr. A. W. McArthur, formerly teaching at Dixon, has taken a school at Winters.

STANISLAUS COUNTY.—School Supt. Robinson of Stanislaus, has appointed F. H. Ross trustee for Modesto district, *vice* Henry Lewis, resigned.—C. P. Evans is teaching the Cole district school. He has twenty-five pupils.—The Modesto Public-School Building which has been in a very unsafe and dangerous condition has been repaired.

SANTA CLARA COUNTY.—A musical and literary entertainment was given at the San Jose high school on December 19th, for the benefit of the library fund.—Rev. Father P. Veyret, for twenty-five years a member of the Santa Clara College Faculty, died there on the 10th.—The State Normal school reopened on the 6th inst. Its past year has been very successful, and its finances managed so as to leave a good surplus for improvement of the grounds.

LOS ANGELES COUNTY.—A Santa Ana correspondent writes that that district has a fine school-building, an excellent *corps* of teachers, and one of the best conducted schools in the county.—A number of the Los Angeles school children and others are rehearsing Robertson's comedy of "Caste" for the benefit of the Episcopal Church.—Santa Ana and Anaheim have a joint Teachers' Society which holds monthly meetings.

OREGON.

EDITOR—PROF. D. T. STANLEY, Monmouth.

BENTON COUNTY.—Prof. D. T. Stanley, Oregon editor of THE SCHOOL AND HOME JOURNAL, gives, in response to our request, some account of the educational work in Benton County: The common school system in this county is generally winning favor. Antagonism to the cause is steadily giving way, and the citizens in many parts of the county are earnestly beginning to inquire about the best methods of improving their schools. The progress thus attained is the result of persistent labor, and if the present outlook be not clouded over by local difficulties, then the time is not far distant when every district in the county will enjoy the benefits of good schools.

Colleges and Schools.—The State Agricultural College is located in this county, and is constantly growing in public favor. As a proof of this I will state that there are now about 170 students in attendance—55 of these are agricultural students. There are four degrees conferred in this college, viz: A.M., A.B., B.S., and Graduate of a School. The course of study is distributed in schools as follows: School of Physics, School of Mathematics, School of Moral Science, School of History and Literature, School of Engineering, and Special Studies of Agriculture. The scholastic year consists of ten months, of twenty days each. This is divided into three equal terms. The faculty is as follows: B. L. Arnold, A.M., Ph.D., President; Rev. J. Emery, A. M., Professor of Mathematics; B. J. Hawthorne, A. M. Professor of Languages; E. B. McElroy, Preparatory Department. The chair of Military Science is vacant at present.

Philomath College.—This institution of learning is situated at the town of Philomath, six miles west of Corvallis. The village of Philomath is a beautiful place, and the surrounding scenery is simply magnificent. There are four courses of study in this College, viz: Classical Course, Scientific Course, Ladies' Course, and Commercial Course. Besides this, a Department of Phonography has been established. The faculty is as follows: Rev. W. S. Walker, A.B., President; Prof. H. Shiek, M.S., Chair of Mathematics; ———, Principal of Preparatory Department.

Public Schools.—The leading public schools of this county are the North and South district schools of the city. The North public school is under the management of Prof. Ladru Royal, assisted by Mrs. S. A. Royal. There are two departments, Primary and Grammar. At present the attendance is very large—100 pupils being in daily attendance. The full course of study established by the State is taught in this school. The South public school has two departments—primary and higher. Prof. E. A. Milner is Principal, and has charge of the higher department. Miss Grace Hanna has charge of the primary department. The full course of study established by the State is taught here, and in addition thereto, an extensive Commercial Course is taught. The attendance at present is quite large—136 pupils being enrolled. Both of the above schools are as well graded as circumstances will permit, and are under able management. Besides these, there are many district schools throughout the county that are taught by industrious and energetic teachers, but the limits of this article will not permit special mention of these, suffice it to say, that the educational advantages of Benton County are certainly equal to those of any other county on the Pacific Slope in proportion to population.

Newspapers.—There are three newspapers published in this county, viz; *The Corvallis Gazette*, *Benton County Blade*, and *Philomath Crucible*. The general editors of these papers have requested reports of school visits, educational meetings, etc., which have been frequently furnished, and which have always found a welcome place in their columns. And I would make special mention that Hon. W. B. Carter, editor of the *Gazette*, has furnished able reporters and published full reports of our County Institutes for the last three years. All of these papers have aided much in inciting an interest in the success of our schools.

Institute Work.—I make mention, finally, of the Institute work in this county. Although wholly voluntary on the part of all concerned, yet the County Institute has become an established fact. These Institutes have had and are having a beneficial influence upon our teachers and schools. Another important feature is, that our school officers take an active interest in these meetings, and by their presence and assistance aid much in their success.——The Teachers' Institute met in this county December 22nd, 23rd, and 24th. With an interesting programme, it was a success. It could not fail to be so under Prof. McElroy's supervision. He is one of the ablest teachers and best superintendents in the State.

NEVADA.

EDITOR—HENRY F. BAKER, Virginia City.

Prof. C. S. Young, Superintendent of Schools of Storey county, and W. W. Booher of Gold Hill, attended the California State Teachers' Institute during the holidays.——The text-book question is in *statu quo*, none of the contemplated changes having been made as yet.——Three hundred and twelve pupils are enrolled in the Reno public schools. There are also four private educational institutions giving instruction to one hundred and twenty-five children.——H. F. Baker, formerly principal of the Silver City schools, has been appointed principal of the Fourth Ward Virginia high school, *vice* D. A. Ewing resigned on account of protracted ill health.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. McCHESENEY, to whom all communications in reference thereto must be addressed.

NEAR Stramberg, in Moravia, have been discovered certain caves which, in pre-historic times, were inhabited by man. The contents of these caves clearly prove the existence of man in very remote times—the age of the mammoth and the cave-bear. Thousands of bones have been found at the depth of two or three metres, representing mammoths, rhinoceros, bears, horses, deer, reindeer, and with them well-preserved implements of stone and bone, objects in bronze, rings, needles, pottery, arrow-heads, and knives.

AN exhibition was lately given in Paris of a method of employing electro-magnetism as a means of subduing vicious horses. With bits, bridles, nose-bands, and curbs specially constructed so as to apply a gentle current from a portable electro-magnet to the required place, seven particularly violent horses were subdued to obedience, and suffered themselves to be shod.

IN the *Journal of the Asiatic Society of Bengal* is published an account of a very remarkable snowfall in Cashmere, which began in October, 1877, and continued almost uninterruptedly up to May, 1878, the general depth of the snow being then estimated at from thirty to forty feet. Houses and villages were crushed under the enormous weight, avalanches were frequent on the hillsides, and wild animals perished in great numbers.

A TOTAL ECLIPSE OF THE SUN IN JANUARY.—Much interest is manifested in scientific circles concerning a total eclipse of the sun to occur on the 11th of January next, visible in California. The center of the shadow will pass about fourteen miles south of Soledad,

in the neighborhood of Abbot and Boswell's Ranch. The time of total obscuration for this locality will be thirty-five and one-half seconds. The eclipse will commence about 2:45 P. M. and continue until the sun sets. This is the last total eclipse of the sun that will be visible from the western part of the continent during the present century, the next occurring on the 29th of May, 1900. Already parties are organizing to visit Soledad, taking with them suitable instruments for making observations. Prof. Davidson will take a coast survey party to the Santa Lucia Mountains, about thirty miles south of Monterey. In addition to the smaller instruments of the survey, he will take a six-and-a-half-inch equatorial, for the purpose of defining more accurately and noting discoveries. Scientists will await with interest his report, as he is known to be particularly skillful in this kind of work. His report of the total solar eclipse in 1868 is remarkable for minuteness of detail and vividness of description.

THE LICK OBSERVATORY.—The *Science News*, speaking of the above observatory, points out the value of the California climate for favorable astronomical observations. It says: "During the last four years, very little has been heard of the observatory to be built in California from the gift of Mr. James Lick, and the public has very generally supposed nothing would come of the project. But there are now signs of renewed activity on the part of the trustees, and evidence of an intention to carry the project through without further delay. In August last, Mr. S. W. Burnham of Chicago, the well-known observer of double stars, was invited to spend a month or two on Mount Hamilton, with his telescope, in order to test the suitability of the mountain as a site for the proposed observatory. His reports were so valuable that Prof. Newcomb, on whose recommendation he was chosen for the work, visited the place himself in September. Both these gentlemen speak in the highest terms of the excellence of the astronomical conditions. Not only is almost every night perfectly clear, but, according to Mr. Burnham, bad seeing is almost unknown. Every night is such a one as he would consider superb at Chicago, and would only meet with two or three times a year. He discovered during his stay a number of new double stars, in portions of the sky which are further south than can be thoroughly examined in the comparatively bad atmosphere of stations this side of the Mississippi. The result of this exploration will give both the trustees and the public a new interest in the project, and it is supposed will lead the former to push the work on as rapidly as possible. If, as both the astronomers who have examined the site seem to suppose, its atmosphere is finer than that of any existing observatory, the result will be that the most powerful telescope in the world will be under the finest sky for supplying its utmost capacity."

UNITED STATES GEOLOGICAL SURVEY.—A circular letter, dated October 20th, 1879, has been issued by G. F. Becker, Esq., Geologist in charge of the Survey at San Francisco, which says: "A main object of the United States Geological Survey is to advance the knowledge and practice of the mining arts by investigation and description of the occurrences of ores, of the methods employed in mining them, and of the processes by which they are treated. Every mining district will receive the attention of the survey; the information obtained and the results of special investigations will be so presented as to afford a trustworthy record of the mineral character of the country and of its resources, and of the methods of manipulation which have proved most suitable under varying local conditions. Each district will therefore receive the benefit not only of the labors of the survey within its limits, but of the collective experience of the whole country. Mr. Becker, very properly, requests the co-operation of the newspapers published west of the Rocky Mountains, and desires his office to be placed on the free list, as the expense of subscribing to all the papers necessary and desirable for correct information is greater than the survey can afford. Suitable acknowledgements of courtesies extended to the survey will be made. We believe there will be a united effort on the part of local newspapers to comply with this desire, as it is the most effective means of gleaning accurate and complete information."

THE PLANETS IN JANUARY.—*Mercury* is a morning star, rising on the 11th at 6 A. M. or one hour and sixteen minutes before the sun; on the 21st at 6:28 A. M., or one hour and fourteen minutes before the sun, and on the last day of the month at 6:53 A. M. He is near the moon on the 10th, and at his greatest distance from the sun on the 23rd. *Venus* is a morning star, rising on the 11th at 3:51 A. M.; on the 21st at 4:18 A. M., and on the last day of the month at 4:43 A. M. She is near the moon on the 8th. *Mars* sets on the 11th at 4:16 A. M.; on the 21st at 3:41 A. M., and on the last day of the month at 3:20 A. M. He is near the moon on the 21st. *Jupiter* is an evening star, setting on the 11th at 9:39 P. M.; on the 21st at 9:5 P. M., and on the last day of the month at 8:38 P. M. He is near the moon on the 15th. *Saturn* sets on the 12th at 12:19 A. M.; on the 21st at 11:37 P. M., and on the last day of the month at 10:56 P. M. He is near the moon on the 17th.

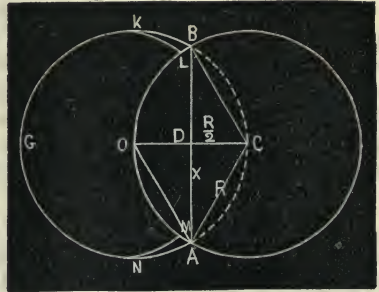
MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

Mr. S. Sturges of this city sends us the following solution of Problem 26, which gives approximate results:

Let the circle whose center is at C represent the field, and suppose the horse to be tethered at at O. Then we are to find the area of the crescent

AGBO. It is evident that this area is equal to one acre less twice the area of the segment ACB, whose chord is AB, because $\angle AOB = \angle ACB$. Draw AC, CB, CO, and AO; Each of these is equal to the radius of the circle. Let R represent the radius. As $AO = R$, the sector CAO is one-sixth of the circle, and the sector CAOB is one-third of the circle, and its area is one-third of 160 square rods = $63\frac{1}{3}$ square rods. Now the segment AOB = $52\frac{1}{3}$ square rods = $\triangle ABC$. Put



$AD = x$, $AC = R$, and $DC = 2\frac{R}{2}$. The area of $\triangle ABC = x \times \frac{R}{2}$. $R = \sqrt{\frac{160 \text{ sq. rds.}}{\text{Pi}}} =$

$7.11 + \text{ rds.}$ $x = \sqrt{R^2 - \frac{R^2}{4}} = 6.18 + \text{ rds.}$ $\therefore x \times \frac{R}{2} = 6.18 + \text{ rds.} \times 3.555 + \text{ rds.} = 21.9699 + \text{ sq. rds.} = \text{area } \triangle ABC$. $53\frac{1}{3} \text{ sq. rds.} - 21.9699 \text{ sq. rds.} = 31.3634 \text{ sq. rds.} = \text{area of segment AOB}$. $31.3634 \times 2 = 62.7268 \text{ sq. rds.} = \text{area of two segments AOB and ACB}$. $160 \text{ sq. rds.} - 62.7268 \text{ sq. rds.} = 97.2732 \text{ sq. rds.} = \text{area of crescent AOBG}$.

This is on the supposition that the fence does not interfere with the line with which the horse is tethered. If that be taken into consideration the area upon which the horse could graze would be a little less.

[Solved in a similar manner by Messrs. Kellogg and Jared, and Master

Proctor. The sum of the areas BKL and ANM is to be subtracted from the result obtained above in order to obtain an exact answer.—ED. MATH. DEPT.]

SECOND RULE FOR ABBREVIATING MULTIPLICATION.—To multiply by itself a number composed of figures, each equal to 9; for example, 99,999 by 99,999. We say that the product will be 9,999,800,001.

To obtain this result, we write down the figure 8, placing to its left as many nines, and to its right as many ciphers, as there are figures less one, contained in either of the two factors, afterward adding to the extreme right of the resulting number the figure 1. Thus, then, in the proposed example (99,999 by 99,999) we write the figure 8, and to its left the figure 9 repeated four times (5—1), and to its right four zeros (5—1), giving as a result 99,998,000; now annexing the figure 1, we obtain the product sought, 9,999,800,001.

Another Example.—If we desired to find the product of 9 by 9, we should obtain, by applying the general rule, 81. In fact, in this case, the number of figures of either factor, diminished by 1, gives zero as a result. This explains why the figure 8 does not appear accompanied by *nines* or cipher, but only by the figure 1 of the units.—*Exchange.*

BOOK NOTICES.

A FIRST GERMAN READING BOOK. Containing Anecdotes, Fables, Specimens of German Literature, etc., with Grammatical Questions and Notes, and a Dictionary, (being Part II of the German Principia.) New York: Harper & Brothers. San Francisco: Payot, Upham & Co.

The publications of the Messrs. Harper are never anything lower than the best, so we say that this work is, without exception, the most logically designed, most carefully constructed book we have yet seen on the subject. The plan of the work is that of Dr. William Smith's Latin Principia. It has the definite aim that at the end of the course the learner shall have a thorough acquaintance with the construction of the German tongue, by constant practice in its various grammatical changes. This book is divided into four parts, the first three printed in Roman, and the fourth in German Text. Each lesson is followed by grammatical questions testing the learner in the accidence and the most important syntactical rules. The notes are copious, but generally brief. Among the most valuable features of the book, in our estimation, are the complete vocabulary or dictionary, and a list of words common to both the German and English language. We earnestly recommend this work to the attention of teachers in cosmopolitan schools as calculated to aid them greatly in their work. There is always so much difficulty in making perceptible progress in the acquisition of a foreign language in American schools, that the teacher should naturally avail himself of the best text-books available for the purpose, and for classes somewhat advanced, this is the very best.

A BRIEF ENGLISH GRAMMAR. On a Logical Method. By Alexander Bain. New York: Henry Holt & Co.

Prof. Bain possesses a logical mind of the highest order. His treatment of any subject is consequently from a philosophic standpoint, deep, and searching. The book before us is a small duodecimo of 186 pages. It will be seen that it is rather an essay on grammar as a science than an elaborate scientific treatise. Many readers know that the great authority on the English language is Maetzner's work in three quarto volumes.

Few teachers have had either the time or the preliminary training to become well acquainted with this work. For all such, Bain's work will do what the ordinary school

grammar never can, *i. e.*, give some knowledge of the structure of the language. It is a mistake to suppose that a teacher need know only the amount of grammar included within the cover of an ordinary school text-book on the subject. This is good as far as it goes, but is certainly not enough for those whose specialty is language. Bain's Grammar we can heartily recommend for Normal schools and teachers as being the only book which gives, in a small compass, a scientific analysis of the English language.

EXERCISES IN LATIN PROSE COMPOSITION. By Elisha Jones, A. M., Assistant Professor of Latin, University of Michigan. Chicago: S. C. Griggs & Co.

The grand success of the "First Lessons in Latin" by Prof. Jones naturally cause anticipations of excellence which, we are pleased to say, are not disappointed in this book. Cæsar's Commentaries and the Orations of Cicero are the basis of the work. The exercises are so constructed that the style of these authors may be following without too servile copying. Extended practice is given in moods and tenses, and all needed assistance is furnished by sufficiently full notes and questions. There are added supplementary exercises for reviews and examinations, and an excellent vocabulary. The retail price of the book is \$1.25.

CALIFORNIA SKETCHES. By Dr. O. P. Fitzgerald. Nashville, Tenn.: Southern Methodist Publishing House. San Francisco: A. L. Bancroft & Co.

Those who know Dr. Fitzgerald, and on this coast who does not, will be pleased again to meet him, if only through the pages of this book. He has embodied the experience of a quarter of a century, spent among us, in a collection of bright sketches, all readable and calculated to give some idea of early California life and manners. The book has already passed through two editions, and we anticipate a large sale for it in this State.

EMERGENCIES, AND HOW TO AVOID THEM AND HOW TO MEET THEM. Compiled by Burt G. Wilder, M. D. New York: G. P. Putnam's Sons. San Francisco: A. L. Bancroft & Co. 36 pp. Price 15 cts.

This is an extremely valuable little pamphlet, which well deserves, as the author recommends, "to be carried in the pocket." It treats briefly, yet clearly, of Poisons and their Antidotes, Envenomed Wounds, Bleeding, Kerosene, Fire, Accidents, and contains a particularly valuable chapter on Drowning. There is no superfluous matter in this book; it is ready for use on short notice.

SELECTIONS FROM AMERICAN AUTHORS. Edited by Samuel Elliot, LL.D., Superintendent of Schools, Boston. New York: Taintor Brothers, Merrill & Co.

The best teachers in all grades of the public schools have long felt the want of some aids to assist them in inculcating a taste for the best literature. No question is more frequently asked at teachers' institutes than, "How shall we give our pupils an ardent desire to read good books?" All teachers recognize the evil now done our youth by the impure literature so generally distributed and read, and feel the responsibility resting on them to mitigate, if they cannot cure, the disease.

We have always held that the remedy for the great mass of inferior books and papers, is to introduce our boys and girls to the best literature in the language.

It is evidently on that principle that two books already noticed in these columns ("Readings from English History," published by the Harpers, and "American Poems," published by Houghton, Osgood & Co.) and this book from the press of Taintor Bros., Merrill and Co., have been issued and placed before our educational public. This book contains 412 pages, printed on good paper, in clear type, is tastefully and substantially bound, and divided into four parts:

Part First is taken from the Autobiography of Benjamin Franklin, which furnishes material both interesting and instructive.

Part Second consists of Familiar Letters of John and Abigail Adams. These letters furnish a chapter of rare interest and value, and in connection with the Autobiography of Franklin present a very vivid picture of the early history of our country, in which the writers bore so conspicuous and influential a part.

Part Third is from Cooper's *Spy*, which has been carefully abridged by the editor, who has at the same time retained the essential points of the story.

Part Fourth is made up of selections from Longfellow's "Tales of a Wayside Inn," published by arrangement with Messrs. Houghton, Osgood & Co., of Boston. Prof. Longfellow expressed a cordial interest in the object aimed at in the preparation of the book, and has kindly given permission to use his writings in connection therewith.

Teachers in first-grade schools and academies will find this book well fitted to supply the demand for supplementary reading, as well as to give a taste for further explorations in the unknown garden of English literature.

We do not know the price of this book, but suppose it to be about \$1.50.

EDUCATION AS A SCIENCE. By Alexander Bain, LL.D., Professor of Logic in the University of Aberdeen. New York: D. Appleton & Co. San Francisco: James T. White & Co., Agency of D. Appleton & Co.

This book is the greatest contribution to educational literature since Herbert Spencer wrote his famous work on Education. No educational library is even partially complete without it. A full review written by one of our most eminent educators, will appear in the February JOURNAL.

BRADBURY'S EATON'S PRACTICAL ARITHMETIC. Combining Oral and Written Exercises. By W. F. Bradbury, A. M. Boston: Thompson, Brown & Co.

While the high excellence of the Robinson's Series of Arithmetics, (particularly the new edition of Dr. Fish) obviates any necessity to change, we consider the work before us of a high order of merit. It is constructed on the sound basis—just becoming recognized among our teachers that the art, not the science of arithmetic is what should receive the most attention in our common schools. The subjects are all treated in a practical manner; the number of rules is small. Features new to us in works of the kind are as follows: Decimals as far as thousandths are introduced at the beginning with whole numbers; the metric system is in the body of the work, and is treated as a part of decimals; cancellation is used throughout the book; in the body of the work only a few of the commonly used tables in Compound Numbers are given; Circulating Decimals, Foreign Exchange, Progression, Alligation are omitted from the main body of the work. There is an appendix containing 700 examples, and those subjects excluded from the first part of the book. Teachers will find themselves well repaid by giving it an examination.

HISTORY OF THE UNITED STATES. By Joseph T. Derry, Professor of Ancient and Modern Languages in Wesleyan Female College, Macon, Georgia. Philadelphia: J. B. Lippincott & Co. San Francisco: Billings, Harbourn & Co.

This is an ordinary school-history, constructed as school-histories have been for the past century, *i. e.*, as a narrative of dates and events. The only merit we can find in the book is that the story is told in a simple, concise style. The demerits are many. It is a narrative only, and in no sense a history; the different wars are allowed too great a space, the "War Between the States" particularly, which receives seventy-one pages out of a total of 347 in the whole book; we again meet the Southern view, and we are tired of the Southern view, the Northern view, or any other but the American view of our country's history. From every appearance we conclude the book designed for use in the schools of the South—a great misfortune. We believe no good school-history will be crowded with details of men slaughtering one another, or devoted to keep alive a feeling of the arrogant superiority of one section over another.

A POPULAR SCHOOL-HISTORY OF THE UNITED STATES. By John J. Anderson, Ph.D. New York: Clark & Maynard. San Francisco: P. P. Hulse, 129 Montgomery Street.

Comparisons are proverbially odious, but we cannot refrain from expressing the opinion, that this book, as far as we have seen, is *the model school-history of our country*. It is, in every respect, what a history should be. There is now no subject worse taught than history; and more time is misspent, and less interest aroused than in any other subject of the school course. With the delightful book before us we firmly believe the fault will lie with our teachers if there is not a complete revolution in the history work in our schools. The plan of this book is calculated not only to make our youth intelligently acquainted with the history of our country, to make them patriotic and liberty-loving, but also to create a taste for the best American literature; and by giving brief extracts from such writers as Bancroft, Irving, Motley, Hawthorne, etc., to implant a desire for a more intimate acquaintance. To effect this there are frequent extracts from the best authors interwoven in the text, making the history a pleasant reading book. Details and dates have been relegated to their proper place in the history of a nation, only such being given as are important in exerting an influence in the nation's progress. The value of geography in connection with history is recognized, and the maps are constructed with the idea that they are here for use. The book contains excellent summaries, and the topics for review are arranged in a simple and effective manner. There are frequent foot-notes, which are both interesting and valuable; and the explanations appended to the Declaration of Independence and to the Constitution, will prove instructive to young teachers as well as to pupils.

Causeless changes in school text-books are always mischievous to educational progress, but if there are communities who contemplate a change, they should certainly examine this book.

OUR CONSTITUTIONS. San Francisco: Sumner Whitney & Co. Price 50 cts.

This is a pamphlet of 202 pages, containing the Federal and our Old and New State Constitutions with a full index to each.

PHYSICAL GEOGRAPHY. By M. F. Maury, LL.D. New York and Baltimore: University Publishing Company.

The reputation of Lieut. Maury as an eminent master of geographical science is world-wide. Guyot, Geikie, Von Bulow, and Maury are the four names standing above all others in their own day in this field of scientific research.

The writings of Thomas Huxley, John Stuart Mill, and others on the subject of geography in our schools, demonstrate that the kind of geography of least value is what we most teach; and that physical geography is of the greatest interest, a better mental discipline, and of most practical benefit. As Prof. Huxley has shown in his able work entitled "Physiography," and as our best teachers now believe, less descriptive and more physical geography may well be taught even in elementary schools. We believe, therefore, that the book before us, *a work without a rival*, should be placed in the higher grades of every grammar school as well as in every high school. Professor Maury's investigations and discoveries in the field of meteorology, the physical geography of the sea, the winds, prepare us for this book—the most delightful and best adapted for school work yet issued from the press on the subject.

The illustrations and maps are numerous, and prepared in the best style possible to the engraver's art. The explanations are clear and brief. The matter is presented in a way to attract the eye and impress the mind.

Much of the subject matter given forms a natural and proper introduction to the study of the natural sciences—particularly of botany, and zoology. Superintendents and teachers who are now arranging for a revision of their course of study will do well to examine this book; we are satisfied they will include it in the new course.

ECCLECTIC SERIES OF GEOGRAPHIES. Numbers One and Two. Cincinnati and New: Van Antwerp, Bragg & Co. San Francisco: Payot, Upham & Co.

The publishers of this series of geographies are known on the Pacific Coast only as the publishers of the McGuffey series of readers—but those books form but a small portion of their extensive publications. In the text-books on geography before us, we have one of the most excellent works it has ever been our fortune to see.

The merits of the series are that the whole subject is condensed; the maps and illustrations are exceptionally good; the location of cities, etc., forms but a small part of the text, which includes something of climate inhabitants, occupations, etc.

The map questions will be found very useful, and the system of map drawing by squares, which we have never seen in any other work, looks like a practicable and easy method of accomplishing the end for which it is designed. The State Geography, which with good maps, is in the shape of a supplement to the book, is a valuable feature.

MONTEITH'S INDEPENDENT COURSE IN GEOGRAPHY, New York: A. S. Barnes & Co. San Francisco: Edward F. Adams, No. 3 Montgomery Street.

This series of geographies, while they retain the best points of the books of Monteith now used in our schools, add features based on the best modern methods of teaching, and thoroughly in line with the progress made during the past two decades in education. The first merit which attracts us is that there is not too much in the two books: in fact, the competent teacher can do the work laid down—as it is intended to be done, too—in three years, two years less than in the present course. The demand from our best teachers is for less geography work. That demand we believe answered in this series, which gives us less in quantity, and that quantity of the right kind.

The excellent idea carried out in the plan of the series is to take up one country at a time and to exhaust that before going to the next. Thus the learner gets a view of the physical, descriptive, and historical geography of every country. Some excellent points in the Comprehensive Geography, the second book of this series, are the *relief maps*, which are calculated to cultivate the student's powers of observation; the Historical Geography, which will be found interesting and a useful aid to history; comparative latitudes and comparative areas; the Topical Geography, an excellent review; and an instructive chapter on Ancient Geography.

From the relief maps a more correct and accurate idea of the surface of a country may be obtained than by any other means. A valuable and interesting exercise for a class is with open books, to locate on these relief maps, the cities and towns of their own State and to trace the routes of travel.

This series of geographies is to have, so we are informed, in the edition for California, the benefit of the labor of Prof. Henry B. Norton of the State Normal School. Prof. Norton stands very high on this coast as an educator, and is pre-eminent as a master of geographical science. Anything from his pen will have durable and practicable worth.

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METEOROLOGY AND CLIMATOLOGY OF THE
REGION WEST OF THE ROCKY MOUNTAINS.

JOHN LE CONTE, L. L. D., PRESIDENT UNIVERSITY OF CALIFORNIA.

NUMBER ONE.

ARID REGION.—In the United States, the regions of the *Great Plains*—the vast treeless country that stretches away from the eastern base of the Rocky Mountains, and the great plateaus and basins lying west of the same range of mountains, constitute the *arid areas* where agricultural operations are impracticable without more or less irrigation. It has been estimated that this arid region is more than *one-third* of the entire area embraced in the United States. From actual surveys and careful estimates it would seem that it will not be profitable to redeem more than *three per cent.* by irrigation. When any brook, creek, or river is utilized, less than *four per cent.* of the region can be said to be forest clad. These forests are restricted to the sides of the high mountains, and extend over the more elevated foot-hills. This does *not* include large areas covered with a scanty growth of dwarf cedars and pines, useful for fuel, but of no value in mechanical industries. Over the remaining districts a

large portion is covered with grasses and other plants, which may, to some extent, be utilized for pasturage. Small valleys lying along mountain streams, will, doubtless, receive most careful and elaborate culture, affording fertile grain-fields, vineyards, orchards, and gardens. The mountains, hills, and plains will furnish nutritious but scant pasturage for herds and flocks; but, after all, the agricultural resources of this vast area must be very limited. Gold, silver, copper, iron, coal, salt, and many other minerals are found in abundance; so that he region will be chiefly valuable for its mineral wealth.

CAUSE OF ARIDITY.—The mechanical cause of all terrestrial currents of air, or winds, must be sought for in the *disturbance of atmospheric equilibrium*, produced by the unequal distribution of solar heat on the surface of the globe. Solar heat must, therefore, be looked upon as the "*primum mobile*," which originates and keeps in continual action the agencies which perpetuate the atmospheric circulation. In other words, the action of solar heat, combined with the very important modification produced by the rotation of the earth upon its axis, affords a *full* and satisfactory explanation—at least in a general and comprehensive view—of the great *system of winds*. The operation of this great physical cause, necessitates the general prevalence of *west winds* near the surface of the earth in the *temperate zones*.

The great water surfaces are the chief sources whence the largest supply of moisture in the form of aqueous vapor is derived. The winds are the chief mechanical agents by which these vapors are wafted to different points where they are condensed into rain or snow, dropping richness and fertility on our fields, and covering our hills and mountain slopes with vestments of verdure.

The land is, directly or indirectly, the agent which brings about the condensation of aqueous vapor. It accomplishes this result either (as in case of winds carrying vapors up mountain slopes) by forcing the vapors into higher and colder regions; or, by creating *upward currents of air* by the action of solar heat, and thus conveying the vapors aloft into the colder regions of the atmosphere.

Thus in a general sense, the oceans, seas, and lakes constitute a *vapor-furnishing apparatus*, while the continents and islands constitute a *great condensing apparatus*: between them a gigantic process of distillation is carried on, which waters the earth, and clothes the land with vegetation. Moreover, it must not be forgotten, that the great thermal influence emanating from the sun, alone has the power of putting in motion the immense apparatus.

For the western portion of our territory, the Pacific Ocean constitutes the great vapor-furnishing surface; the prevailing west winds sweep the vapors upon the lands lying to the east of the ocean; and the mountain ranges furnish the condensing apparatus.

It is evident, therefore, that all the aqueous phenomena of the atmosphere, embracing *fog, rain and snow*, may be rationally accounted for, by attending to the three following considerations:

1. The *position* of bodies of water, furnishing aqueous vapor of greater or less tension; the degree of tension having relation to the temperature of the water.
2. The *direction* of the prevailing winds sweeping the vapors to regions of condensation or otherwise.

3. The *configuration* of the adjacent and remote lands, in promoting or opposing the operation of causes producing condensation of the vapors.

APPLICATION.—These general physical principles are readily applied to the explanation of the *aridity* of the extensive areas lying east of the Sierra Nevada and Cascade mountains. Through the whole length of the State of California, the Sierra Nevada mountains are lofty and continuous, presenting an almost unbroken chain, with an average elevation of about 10,000 feet. This "*great sea-wall*" almost completely shuts off the moisture borne by the vapor-bearing west winds coming from the Pacific Ocean. The small amount of moisture that surmounts the lofty snow-clad crests of these mountains, is barely sufficient to produce a scanty precipitation of rain and snow from December to May each year, during the rainy season of the Coast Ranges. Hence we find, *east of this huge wall*, through the central portions of the State of Nevada, from the Mud Lakes of the north, through the Humboldt Desert, and the Great Salt Valley, and on the south to Death Valley in California, a region of extreme aridity and barrenness. Most of this vast area is dreary and desolate beyond conception, being nearly destitute of water and vegetation, fearfully hot in summer, and occasionally swept by terrible sand storms. North of latitude 41° , the Cascade and other ranges constituting the continuation of the Sierra Nevada mountains, have a mean elevation of only about 6000 to 7000 feet; so that a somewhat larger supply of moisture from the Pacific Ocean reaches the plateaus and basins lying between these and the Rocky Mountains. It is principally for this reason, that eastern portions of Washington Territory and Oregon, and the whole of Idaho, although situated in the northern extension of the arid region, receive a somewhat larger supply of rain than corresponding districts in Nevada and California. It has already been remarked, that there are unquestionable indications, that at a former epoch, a large portion of the *Great Basin* was covered with water. During the "*Champlain Epoch*," these arid plains were covered with immense sheets of water, of which the existing Saline Lakes are the isolated residues. Hence, it follows, that the extreme dryness of the climate now existing in these regions, did not always prevail. Since the above-mentioned geological epoch, there has been an increasing dryness of climate over the whole of the "*Great Basin*." Is it still progressing? or has it reached its maximum of aridity? Is the *great cycle of humidity* returning upon these desert plains, and will they once more be clothed with vegetation at some future period? These are important questions in relation to the future of the Pacific States. There are certainly evidences that during the past twenty-five years, there has been a decided *increase* of rain-fall and snow-fall over a large portion of the *Great Basin*. Great Salt Lake is known to have risen fourteen feet within the last twenty-five years, thereby submerging large tracts of land on its flat margins; and chemical analysis show that its waters are progressively freshening. According to the observations of Clarence King, during only four years (1867-71), Pyramid Lake has risen nine feet, and Winnemucca Lake, twenty-two feet within the same short period. In like manner, Mono Lake has risen ten or twelve feet during the last fifteen years. The same is said to be true of Webster's Lake, and Owen's

Lake. Additional evidence of the increasing snow-fall in the Sierra Nevada is afforded by the fact that the glacial masses which cover the flanks of its lofty mountain-peaks, seem to be advancing on the foot-hills.

It would seem, therefore, that the size of the lakes occupying the *Great Basin* is undoubtedly the result of a *climatic cycle*. The momentous question for the future prosperity of the Pacific States, is, *whether the cycle is to be a long or a short one*. Whether it is to be a *geological cycle* of augmenting rain-fall and snow-fall, constituting a *secular* change of climate, or whether it is to be only a climatic fluctuation of such short duration as to exercise no appreciable influence on the development of the vegetable and animal kingdom. This vital question cannot, from the want of sufficient data, be answered at the present time. Our successors, will, without doubt, be able, after the lapse of sufficient time, to accumulate accurately observed facts, numerous enough to warrant the deduction of trustworthy conclusions.

PARDON COMPLETE

BY CLARA G. DOLLIVER.

SHE was pretty and happy and young !
 The gods from Jupiter down,
 Grew pale with envy as they sung
 Till Venus' nerves were quite unstrung,
 And black was Juno's frown.
 Pretty with graces numberless,
 As her feet—not over small,—
 Went dancing on with eagerness;
 Charity? Yes: To buy a dress
 To wear at the Charity Ball.

Snips, the gamin, was coming up
 With a friend in the paper line ;
 His crownless hat, a huge straw cup
 With brick-red hair filled brimming up,
 Had a rakish and gay incline.
 His coat had little left of sleeves,
 From boots, his curious toes
 Peeped slyly out, like darkey thieves,
 His ragged trousers waved their leaves
 Like banners to his foes.

Those trifles, though, were very far
 From troubling him in the least,
 The stump of a very cheap cigar,
 --Poor Snips was not particular !—
 Making him lunch and feast.
 He looked with grins at business men
 Who rushed by looking worried,
 And vowed he 'd not exchange with them ;
 —He hated to be hurried!

He turned the corner ; Rosebud sweet
 Just turned the corner, too,
 And tripped her toes against his feet ;
 So very awkward on the street !
 The gamin whistled " Whew ! "
 " Oh dear ! I beg your pardon, sir ! "
 With pretty blushes, said
 The blithe and bonny traveller,
 Dyeing her cheeks with red.

Off came the gamin's ragged hat,
 With bow that swept the walk ;
 " You hev my parding, Miss, if that
 Is how yer gwine ter talk,
 I'd like to give it on my knees ;
 I'd run all over town
 To see yer face ! an Miss, jess plase
 Next time ter knock me down ! "

They sauntered on ; Snips heaved a sigh ;
 —His friend bestowed a grin.
 —" Ter notice such a cove as I
 Fer bein' run agin !
 I never had my parding axed
 Afore, an I must say
 It made my head feel kinder mixed ;
 It tuk my breath away."

THE APPORTIONMENT OF THE SCHOOL MONEYS.

THE present mode of apportioning the school funds, is open to serious objections. The method is unequal and works great injury to the larger number of country districts. The smallest schools have been benefited at the expense of the more numerous class of medium-sized and more populous. Districts with less than fifteen children attending their school, are now enabled to have an eight or ten months' school, and even to accumulate a yearly surplus, while adjoining districts with fifty or sixty pupils, are unable to keep school more than six months. The following plan devised by Superintendent J. N. Thompson of San Benito, recommends itself by its simplicity and fairness. Following the diagram, which shows clearly every detail of the new method proposed, is a law which will be submitted to the legislature for consideration and adoption. Correspondence from superintendents, teachers, and all interested, is invited. It is hoped the plan will be critically examined; and if found as meritorious as it appears, will be incorporated in the new School Laws.—[ED. JOURNAL.]

Names of Districts.	No. of Scholars on Census Report.	Average Attendance for the Year.	The Present way of Apportioning.	Giving \$300 for Each Teacher.*
Bear Valley.....	22	19	\$ 500	\$ 585
Butte Water.....	52	17	672	555
Crenega.....	17	9	500	435
Erie.....	36	6	500	390
Emmet.....	37	11	500	465
Enterprise.....	38	21	500	615
Fairview.....	67	33	722	795
Gabilan.....	30	15	500	525
Hollister.....	431	176	3929	4140
Junction.....	16	13	500	495
Lone Tree.....	51	13	668	495
Live Oak.....	35	21	500	615
Oak Grove.....	63	27	709	705
Pacheco.....	67	45	722	975
Paicines.....	30	12	500	480
San Benito.....	17	13	500	495
San Juan.....	218	77	2222	2055
Santa Ana.....	50	21	665	615
Tres Pinos.....	63	28	709	720
Union.....	22	14	500	510
Willow Creek.....	31	16	500	540
Yanitos.....	37	6	500	390
Jefferson.....	58	21	692	615
			\$18,210	\$18,210

*Assigned according to present basis. Balance apportioned on average attendance.

THE PROPOSED LAW.

1858. All State school moneys apportioned by the Superintendent of Public Instruction must be apportioned to the several counties in proportion to the number of school census children between five and seventeen years of age, as shown by the returns of the School Census Marshals of the preceding school year; *provided*, that Indian children who are not living under the guardianship of white persons, and Mongolian children, shall not be included in the apportionment list. The School Superintendent of each county must apportion all State and county school moneys as follows:

First—He must ascertain the number of teachers each district is entitled to, by calculating one teacher to every one hundred census children, or fraction thereof of not less than fifteen census children, as shown by the preceding school census.

Second—He must ascertain the total number of teachers for the county, by adding together the number of teachers assigned to the several districts.

Third—Three hundred dollars shall be apportioned to each district for

every teacher assigned it; *provided*, that to districts having ten and less than fifteen census children, shall be apportioned one hundred and eighty dollars.

Fourth—All school moneys, remaining on hand after apportioning three hundred dollars to each district having fifteen census children or more, for every teacher assigned it, and after apportioning one hundred and eighty dollars to districts having less than fifteen census children, must be apportioned to the several districts in proportion to the annual average attendance as shown by the next preceding annual report of teacher (sworn to.)

1882. When a new district is formed by the division of an old one, the School Superintendent must, after payment of debts, divide the money to the credit of the old district at the time the school was first opened in the new district, and such as may afterwards be apportioned to the old district, according to the number of children resident in each district, for which purpose he may order a census to be taken.

Provided, That when the division has been made so near the end of the the school year, that no school could be kept in the new district during year, then for the ensuing year, each district shall receive its three hundred dollars for each teacher assigned to it, and the balance due the old district shall be divided, according to the number of children resident in each district.

COMPOSITION SUBJECTS.

BY HON. H. M. SHERMAN.

[Superintendent Public Instruction, Arizona.]

EVERY teacher is aware of the difficulties and worry attending composition writing. All teachers recognize that there is no work of more practical value done by the pupil than in preparing the school theme. Declamations and recitations train the memory and elocutionary powers. In these respects the composition can be made nearly as efficient, while the pupil, at the same time, is taught, not only to express himself in writing; but in spelling, in pronunciation, and in all that makes up the composition, the exercise is of inestimable benefit.

The success of this school labor depends more than anything else upon the class of subjects given out. The teacher is a lover of books, an admirer of essays, he delights in cutting the leaves of the new magazine. But, it is not, however, the book, or the magazine, he had best peruse in search of appropriate composition subjects. At his elbow is a kind of literature which he can study to much better advantage for this purpose. The newspaper, so carelessly read, is the suggestive source to which he can best turn.

It is in the field of journalism that the young men of to-day begin their literary career. It is as reporters their written productions first appear in print. As this is the first round in the ladder to a literary life, it is reasonable to infer

that a class of subjects similar to that with which the reporter deals, is best suited to the writer of school compositions.

To apply this idea practically, the teacher, for the time being, may consider himself the news editor of a paper, the class his reporters. Some member of the school, perhaps, gives a party. Let one who attends have that special party for the subject of his composition. Not "A Party," as the subject is usually given out, but "Johnnie Smith's Party," or whoever may be the host. Picking up the newspaper the teacher will there find a description of some like entertainment; and from a careful reading, will be able to give his amateur reporter proper instructions, as the place, the time, the weather, who were there, what games were played, what occasioned especial merriment, what refreshments were served, and especially such other instructions as circumstances require. The directions should always be given without stint, so that the composition, when handed in, shall not be a general one, applying to any boys' or girls' gathering, but specific—an actual account of the occurrence as it transpired.

There may be near the school-house, a quarry, a mine, a tannery, or a mill. There is always something of the kind to which the young reporter can be sent for his subject matter. Even interviewing, now so prominent in journalism, can be made very efficient and Mr. ——'s opinion on some topic of the day is frequently an admirable article. An abstract of the minister's sermon may be required, or a lecture reported. Local politics can be attacked; while on national politics even strong, ultra expression is admirable.

Among the subjects found in the lists given in our school rhetorics, there are many, which by a slight alteration, can be transformed into titles of this class. Many authors of rhetoric have implied, if not directly indicated, such a change; for their lists are necessarily general, rather than special, in character. As an instance, instead of "A Brook," as it is found in the list, substitute the name of some stream, flowing near the school-house, with every bend of which the pupil is familiar. Instead of "Poverty," in the abstract, let it be poverty made concrete, in a form of an organ-grinder, or a beggar, whom the pupil has handed bread from the mother's hand.

The great advantage of this class of subjects is that they are specific, not general. The pupil has definite facts and ideas in his mind, of which he is personally cognizant. The feeling of doubt and uncertainty besetting him, is dispelled, for he has something to say having, himself, collected his facts. His self-reliance has been stimulated, for he has himself done all the work. Besides this, he has been practically taught, not only how written articles are built up, but also, in what manner of way the material for their construction is gathered together. Again, the great obstacle to original themes is avoided. Teachers are well aware how much pupils are given to copying, if not by paragraphs, by sentences. The temptation is great. The way in which an author has written, seems so simple, the pupil really believes that he would express himself in an exactly similar manner. The composition is too apt to be constructed with sentences detached from here and there. At least, the author's ideas and mode of arrangement are adopted. The class must be encouraged. The matter is

quite presentable in case visitors are present. The teacher says nothing, but at the same time the thought cannot be dispelled, how much more desirable it would be to have a class of subjects upon which only original matter could be written.

Before closing, it would not be inappropriate to add that this is not presented as a cast-iron system. Historical and biographical subjects, for instance, form an important class; given out with proper directions they will lead the pupil to read, and perhaps become interested in valuable instructive works, which is certainly a worthy object attained. But with this class, as well, it is far better to have the titles as specific as possible. Instead of attempting the complete biography of some prominent historical character, let the subject be an important day, or period of his life.

In a word, the more specific the subject, the more fit it is for a school composition.

IN THE LABORATORY WITH AGASSIZ.

BY A FORMER PUPIL.

IT was more than fifteen years ago that I entered the laboratory of Professor Agassiz, and told him that I had enrolled my name in the scientific school as a student of natural history. He asked me a few questions about my object in coming, my antecedents generally, the mode in which I afterwards proposed to use the knowledge I might acquire, and finally, whether I wished to study any special branch. To the latter I replied that while I wished to be well grounded in all departments of zoölogy, I proposed to devote myself specially to insects.

“When do you wish to begin?” he asked.

“Now,” I replied.

This seemed to please him, and with an energetic “Very well,” he reached from a shelf a huge jar of specimens in yellow alcohol.

“Take this *fish*,” said he, “and look at it; we call it a *Hæmulon*; by-and-by I will ask you what you have seen.”

With that he left me, but in a moment he returned with implicit instructions as to the care of the object intrusted to me.

“No man is fit to be a naturalist,” said he, “who does not know how to take care of specimens”

I was to keep the fish before me in a tin tray, and occasionally moisten the surface with alcohol from the jar, always taking care to replace the stopper tightly. Those were not the days of ground glass stoppers, and elegantly shaped exhibition jars; all the old students will recall the high, neckless glass bottles with their leaky, wax-besmeared corks, half eaten by insects and begrimed with cellar dust. Entomology was a cleaner science than ichthyology, but the example of the professor who had unhesitatingly plunged to the bottom of the jar to produce the fish was infectious; and though this alcohol had “a

very ancient and fish-like smell," I really dared not show any aversion within these sacred precincts, and treated the alcohol as though it were pure water. Still I was conscious of a passing feeling of disappointment, for gazing at a fish did not commend itself to an ardent entomologist. My friends at home, too, were annoyed, when they discovered that no amount of eau de cologne would drown the perfume which haunted me like a shadow.

In ten minutes I had seen all that could be seen in that fish, and started in search of the professor, who had, however, left the museum; and when I returned, after lingering over some of the odd animals stored in the upper apartment, my specimen was dry all over. I dashed the fluid over the fish as if to resuscitate the beast from a fainting-fit, and looked with anxiety for a return of the normal, sloppy appearance. This little excitement over, nothing was to be done but return a steadfast gaze at my mute companion. Half an hour passed,—an hour,—another hour; the fish began to look loathsome. I turned it over and around; looked it in the face,—ghastly; from behind, beneath, above, sideways, at a three quarters' view,—just as ghastly. I was in despair; at an early hour I concluded that lunch was necessary; so, with infinite relief, the fish was carefully replaced in the jar, and for an hour I was free.

On my return, I learned that Professor Agassiz had been at the museum, but had gone and would not return for several hours. My fellow-students were too busy to be disturbed by continued conversation. Slowly I drew forth that hideous fish, and with a feeling of desperation again looked at it. I might not use a magnifying glass; instruments of all kinds were interdicted. My two hands, my two eyes, and the fish; it seemed the most limited field. I pushed my finger down its throat to feel how sharp the teeth were, I began to count the scales in the different rows until I was convinced that that was nonsense. At last a happy thought struck me—I would draw the fish; and now with surprise I began to discover new features in the creature. Just then the professor returned:

"That is right," said he; "a pencil is one of the best of eyes. I am glad to notice, too, that you keep your specimen wet and your bottle corked."

With these encouraging words, he added,—

"Well, what is it like?"

He listened attentively to my brief rehearsal of the structure of parts whose names were still unknown to me: the fringed gill-arches and movable operculum; the pores of the head, fleshy lips, and lidless eyes; the lateral line, the spinous fins, and forked tail; the compressed and arched body. When I had finished, he waited as if expecting more, and then, with an air of disappointment,—

"You have not looked very carefully; why," he continued, more earnestly, "you have n't seen one of the most conspicuous features of the animal, which is as plainly before your eyes as the fish itself; look again, look again!" and he left me to my misery.

I was piqued; I was mortified. Still more of that wretched fish? But now I set myself to my task with a will, and discovered one new thing after another, until I saw how just the professor's criticism had been. The afternoon passed quickly, and when, toward its close, the professor inquired,—

“Do you see it yet?”

“No,” I replied, “I am certain I do not, but I see how little I saw before.”

“That is next best,” said he earnestly, “but I won’t hear you now; put away your fish and go home; perhaps you will be ready with a better answer in the morning, I will examine you before you look at the fish.”

This was disconcerting; not only must I think of my fish all night, studying, without the object before me, what this unknown but most visible feature might be, but also, without reviewing my new discoveries, I must give an exact account of them the next day. I had a bad memory; so I walked home by Charles River in a distracted state, with my two perplexities.

The cordial greeting from the professor the next morning was reassuring; here was a man who seemed to be quite as anxious as I, that I should see for myself what he saw.

“Do you perhaps mean,” I asked, “that the fish has symmetrical sides with paired organs?”

His thoroughly pleased, “Of course, of course!” repaid the wakeful hours of the previous night. After he had discoursed most happily and enthusiastically—as he always did—upon the importance of this point, I ventured to ask what I should do next.

“Oh, look at your fish!” he said, and left me again to my own devices. In a little more than an hour he returned and heard my new catalogue.

“That is good, that is good!” he repeated; but that is not all; go on;” and so for three long days he placed that fish before my eyes, forbidding me to look at anything else, or to use any artificial aid. “Look, look, look,” was his repeated injunction.

This was the best entomological lesson I ever had,—a lesson whose influence has extended to the details of every subsequent study; a legacy the professor has left to me, as he left it to many others, of inestimable value, which we could not buy, with which we cannot part.

A year afterwards, some of us were amusing ourselves with chalking outlandish beasts upon the museum blackboard. We drew prancing star-fishes; frogs in mortal combat; hydra-headed worms; stately crawfishes, standing on their tails, bearing aloft umbrellas; and grotesque fishes with gaping mouths and staring eyes. The professor came in shortly after, and was as amused as any at our experiments. He looked at the fishes.

“Hæmulons, every one of them,” he said; “Mr. —— drew them.”

True; and to this day, if I attempt a fish, I can draw nothing but Hæmulons.

“The fourth day, a second fish of the same group was placed beside the first, and I was bidden to point out the resemblance and differences between the two; another and another followed, until the entire family lay before me, and a whole legion of jars covered the table and surrounding shelves; the odor had become a pleasant perfume: and even now, the sight of an old, six-inch worm-eaten cork brings fragrant memories!

The whole group of Hæmulons was thus brought in review: and, whether engaged upon the dissection of the internal organs, the preparation and exami-

nation of the bony frame-work, or the description of the various parts, Agassiz's training in the method of observing facts and their orderly arrangement was ever accompanied by the urgent exhortation not to be content with them.

"Facts are stupid things," he would say, "until brought into connection with some general law."

At the end of eight months, it was almost with reluctance that I left these friends and turned to insects; but what I had gained by this outside experience has been of greater value than years of later investigation in my favorite groups.—*From American Poems, published by Houghton, Osgood & Co., Boston.*

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[San Diego County.]

CHAPTER VII.—EXAMINATION.

TWICE a year the Boards of Examination deserve the sympathy of all good people. Twice a year the hundreds of would-be teachers fail at examination, and complain, with bountiful indignation, of catch-questions and educational puzzles, of unfair workings and grievous partiality. Twice a year do three holders of first-grade certificates assemble in each county, and feel a due sense of the importance of their profession, and of themselves as leaders therein; they smile indulgently upon the high-school girls who have reached the magic age of eighteen, who appreciate them with so much respectful awe. Each member of the Board has to assure the fair and trembling applicant that he himself, is very easy and tender with the marking, and he thinks that the other members are inclined to be indulgent, also. He has to give his opinion as to whether the questions are likely to be hard or easy, this term; and whether the examinations are likely to be any easier under the new constitution.

At Santos City, ten applicants for certificates assembled at the school-house on the 26th of November, 1879. Also, a number of high-school pupils, who were too young to teach, came to try the examination "just for fun, you know," and to amuse the evening hours of the examiners by giving them some papers to mark, so that the dear creatures might see how they would stand at a real examination. Some of their class-mates were among the ten applicants, and had lengthened out their dresses, and smoothed down hair and face in a manner becoming to a candidate for the responsibilities of a teacher. One of the applicants, a young man about twenty years old, was explaining to the superintendent the reason why he failed at a previous examination in another county. "The examiners were prejudiced against me," he said, "because I was educated in a private school, instead of the school where they taught." The members of the Santos County Board of Examination were Mr. Cameron, Mrs. Strong, and John Dean (who had been recently appointed

to fill a vacancy.) A tall young lady was beseeching Mrs. Strong "to make those two men be merciful when they look at my papers," while a teacher who had obtained his certificate at a previous examination, was explaining to Mr. Cameron and John Dean, the urgent necessity of keeping up the standard of examination.

At nine o'clock precisely, the general questions were given out. Mr. Silver did not believe in waiting for tardy candidates until ten o'clock on the first morning, as is too often done, and thus compelling slow writers and close thinkers to go without their dinner in order to have time to finish the grammar papers.

John distributed paper, pens, etc., to the candidates, speaking an encouraging word as he passed to Miss Bell, who had prepared for the examination under his guidance. After the general questions, came the spelling paper, containing fifty words of rather more than the average difficulty, which were pronounced to the examinees, who wrote them upon paper.

Of late the State Board of Examination, who prepare the printed list of questions, have very wisely left out the papers on composition and penmanship and required the examiners to mark these from the general correctness and looks of the papers. Why these studies are not considered as necessary for a third-grade teacher as for the higher grades, is, however, a mystery.

Why do they not leave the spelling to be so marked, also? Why not give the applicant 100 credits to start with and take off one credit for each misspelled word in these papers? Surely that would be a better test of the candidate's ability to spell correctly, than writing a list of fifty words, some of which are seldom used, and three of which the preparer of the papers (or was it the printer,) spelled incorrectly. Then what a trouble it is to hunt up the pronunciation of doubtful words which may have two pronunciations, and other words that may be spelled in two or more ways. To be sure, examiners should know these things, but there a few, a very few things, which even Boards of Examination are ignorant of. Then, only think of the number of scowls upon the fair candidates' brows; of the ends of pen-holders nibbled; and of finger-nails bitten in the efforts of the candidates to construct the orthography of words which they had never before heard of. It was required to mark the primary accents of some of the words and this was done in a variety of ways unknown to Webster, such as drawing a straight line under or over the syllable to be accented, marking long and short vowels, etc.

When the spelling papers were marked, it was found that four of the candidates including the mis-used young man from the other county, had been ruthlessly slaughtered by the pencils of the examining board, while three others had barely enough credits to keep on with the examination. The grammar papers came next in order. 125 credits is allotted to oral and written grammar, where 100 credits would be more than enough. Of these 100 credits, fifty should be given, in the same way as the credits for composition—one credit to be taken away for each error in the written papers on the other studies. The other fifty would be enough to give for that almost valueless information which we get from Brown, for parsing and for the correction of false syntax.

The questions on methods of teaching, which the oral grammar is supposed to call for, belong to the Theory and Practice papers. Nor need there be any confusion in the marking, in distinguishing errors of grammar from errors in composition; for the latter may be marked from the punctuation, capitalization, and arrangement of the sentences, while the former may be marked only from those errors which we commonly call false syntax. No fear but that the examiners will find plenty of all kinds of errors. Some of the answers which were given to the grammar questions were quite laughable. For instance: "I admire twins," was given as an example of a double object. "He married her for her money," said another, "contains a direct and indirect object. The direct object he married was 'her,' the indirect object he married was 'money.'" It is needless to say that the latter example got full credits. The arithmetic questions were, evidently, written very hastily; for the sixth question was omitted, and several other mistakes made which a little more care would have avoided. For example, in the fourth question, square yards of muslin were asked for instead of linear yards, thus making the statement that the muslin was $1\frac{7}{8}$ of a yard wide, and that the length of the room was to the width as 38 to 33, of no importance, to say nothing of the absurdity of buying muslin by the square yard.

Number five asked for a gain per cent., where there was a loss, and one of the mental arithmetic questions did the same. This, however, may have been intentional.

The candidates found considerable fault with the ninth question—a problem about an inclined plane—as neither the arithmetic nor the physics used in this state contains such problems. True both the books should give them, but even in our state, text-books are not quite perfect in every respect.

To the seventh question,—which stated that a note for \$500, payable in 2 years 7 months and 25 days, interest at 8 per cent. was bought six months before it was due for \$570, and asking the per cent. that was made at the maturity of the note,—four different answers were given by the examinees, each of which might be called correct, according to the way in which the problem was received.

Now examples with two or more possible answers ought not to be given at examinations; for the examiners are apt to mark an answer differing from theirs as incorrect, and thus do injustice where the explanation of how the answer was obtained, may not be very clear. Then, though the examinees ought not to have said that a period was "a stop placed after a complete sentence," or that an order was "a written direction to another person to pay money, etc.," yet should they lose all the credits that a remembrance of the meaning of those words in notation might have given them. Surely their answers were not so bad as asking for the climate, flora, fauna, etc., of Australia, among the U. S. history questions. Similar instances of carelessness were too plentiful in this State list of questions. Did the State Board mean to ask for the complete *derivation* of five Saxon roots? Surely they meant derivatives, and then it would be too much to expect a *complete* list at a moment's notice, even from a professor of philology,

It has long been a favorite way to say to the examinees: "Tell all you know about, etc." Now a sensible man does not like to tell *all* he knows, even at examination times; to say nothing about being merciful to the examiners, and to the pockets of those who furnish the paper. In answer to a history question calling for "the first, last and most important battle of the revolution." Miss Bell justly replied, "There was more than one important battle during the revolutionary war."

One cannot help wondering, when the State Board of Examination, composed of teachers of undoubted ability and learning, let such errors as these creep into the list of questions, what will be the result when fifty or more County Boards of Education, by the provisions of the new constitution, make their own lists of questions and rules for examination. In marking the arithmetic papers, the Santos Board of Examiners gave one-half the credits for a correct answer, and the other half for a correct method. If the method was obscure or in part wrong, the examinee lost more or less credits.

Three of the six remaining applicants received more than fifty credits out of one hundred, on their arithmetic papers, and were allowed to proceed with the examination, though Miss Bell was the only one who received enough credits to permit her to try for a second grade certificate.

The far-seeing wisdom of the legislature had placed the November examination so that Thanksgiving day might follow the first day of examination. This is more than convenient for many reasons. It gives the examinees a chance to earn their Thanksgiving dinner by looking over the grammar papers while the turkey is roasting. It improves the digestion and the appetite of the examinees; and between the unhealthy dinner and the Thanksgiving ball that follows, to say nothing of the trifling worry over the result of the workings, the applicants that have not failed already, are in excellent condition to do so when Friday morning comes. John Dean refused to mark Miss Bell's papers as she had prepared for the examination under his guidance, and he thought that a teacher could hardly fail to be more or less prejudiced for or against one of his own pupils.

As none of the candidates had enough credits to proceed with the first-grade studies, the examination ended with Friday, but the examiners had to work far into the evening before their work was completed.

Do the people ever stop to think of the generous public spirit shown by many teachers who are members of California examining Boards? They leave school, perhaps for a week at a time, where they receive from four to six dollars a day, and work three or sometimes but one or two days for three dollars a day, and out of this, or shall we say *with this* pay extra hotel expenses which are *not* included in their traveling expenses, as they should be. Then they work almost twice as long as when teaching; holding night sessions when work presses, to avoid an extra day's expense to the county, and are rewarded—well, we all know how they are rewarded.

At the close of the examination it was found that Miss Bell was the only one of the applicants who had obtained enough credits for a certificate, and as she lacked but five credits of enough for a second grade, it was unanimously

determined by the Board to find those five credits somewhere. A great many county boards as well as the State Board are not unfrequently generous in this way.

They found the credits.

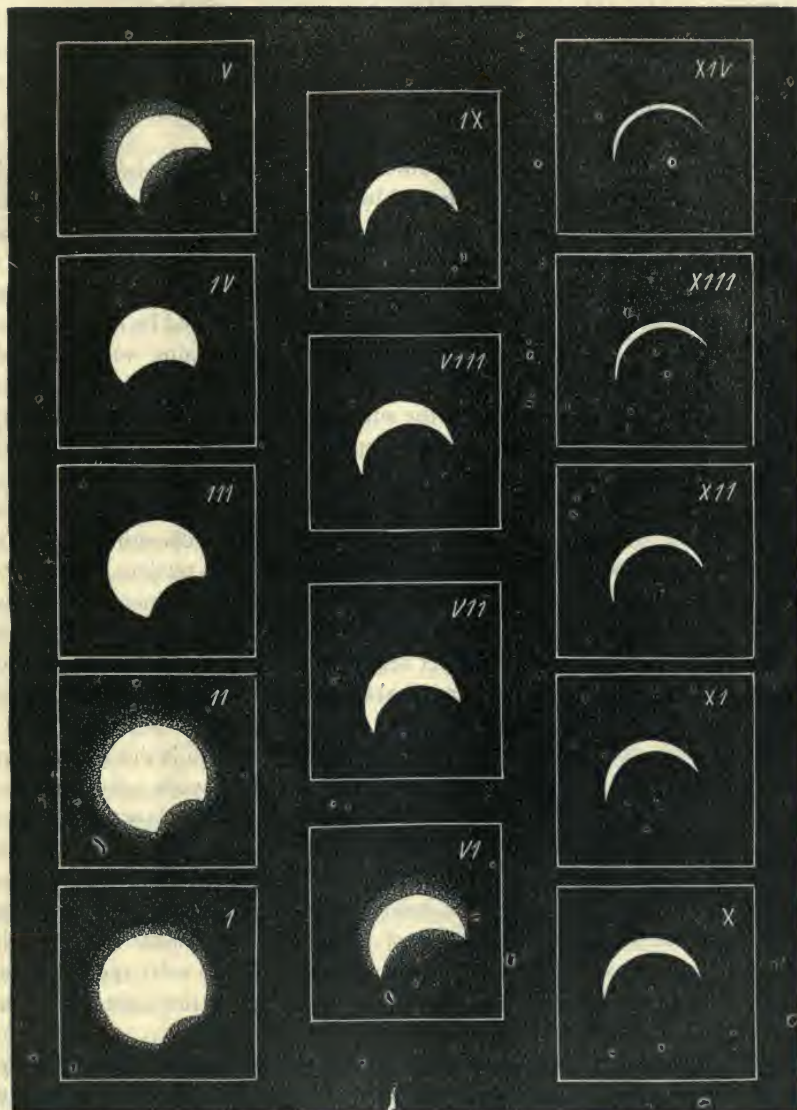
THE SOLAR TOTAL ECLIPSE OF JANUARY 11, 1880.

AT the last meeting of the California Academy of Sciences, Prof. Davidson informed the members that, as heretofore, the Superintendent of the Coast Survey had authorized him to make known to them the general facts observed.

The phenomena observed in a Solar total eclipse are so wonderfully different from those observed in a partial eclipse, they might be supposed to belong to a wholly different event. The conditions observed in this city during the last eclipse, are familiar to all our readers; but the apparently miraculous change that takes place at totality cannot be described in ordinary terms, because there is no display in nature that approaches it in sublimity and unexpected glory. Up to the very instant of the disappearance of the last line of sunlight, rarely any unusual circumstance presents itself, but the moment the last point of the sun is obscured, the marvellous rose-colored flames burst upon the view: the bright radiance of the corona surrounds the black disc of the moon in concentric rings of decreasing light, while other rays of light stretch a diameter of the sun to the left and right of the sun's equator. In the present case these rays were not steady, but lengthened and contracted visibly; a phenomenon sometimes witnessed in the tail of a comet. The black disc of the moon hangs in mid heavens, with perspective effect between the observer and the brightened sky; it seems tangible and curiously close.

In this eclipse all the observers noted the single rose flame near the sun's vertex, whilst the lower border of the sun was surrounded by a continuous line of red flames, which reached nearly 40,000 miles in height, and stretched over one million of miles in length. The single flame on the top was fully 75,000 miles in elevation, with a base of two-thirds the height. The inner and brighter ring of the corona was in width about the height of the larger flame.

Besides determining the epochs of the four contacts of the limbs of the sun and moon, that is, the commencement of the eclipse, commencement and ending of totality, and the ending of the eclipse, it was deemed of importance to study and sketch the corona during the short interval of totality. The thirty-three seconds of this phase were shortened by each observer making his record of the time of commencement of totality; and yet the sketches by the different observers are very satisfactorily consistent. They indicate that the corona lies in and parallel with the plane of the sun's equator. It should be understood that until the total eclipse of 1860, it was not rigidly proven that the corona was an appendage to the sun; now this is well established, but its



I—2:42 P. M. III—2:50 P. M. V—3:08 P. M.
 VI — 5 P M IX—3:30 P. M. XIV—3:49 $\frac{1}{8}$ P. M.

form, constituents etc. have not been satisfactorily determined. This appendage or envelope may be in some way connected with the Zodiacal light which was observed to be unusually bright for several evenings preceding the eclipse. It is known to shine, in part, by reflected light, which indicates that particles of matter are suspended throughout it; it also shines by its own light, affording in the spectroscope the green line known as 1474 (which is present also in the Aurora Borealis), and the line of *helium*. Both these substances are yet undiscovered on the earth.

When the sun itself is seen, the observer looks upon the *photosphere*, it is that which is seen by the naked eye, and by the ordinary telescope. Ordinarily it appears of uniform color and texture; but when the atmosphere is clear and very steady, the whole surface of the sun has a mottled appearance, as if one looked down upon a great mass of boiled rice, wherein each grain was separated from the others. Sometimes large areas are marked by long intricate bright lines, as if a continuous, contorted string of rice grains were involved. These are the *faculæ* and are the summits of the rose-colored flames. When these *faculæ* are upon the border of the sun, they make themselves visible during a total eclipse; and with the spectroscope attached to a telescope, they can be detected at any time.

This photosphere is also marked by the "sun spots," of which three groups were visible on January 11th, and which were described as changing form during the time of observation. The sun spot has a dark nucleus called the *umbra*, around which is a less dark border, denominated the penumbra; whilst outside of the spots are the bright wavy lines of *faculæ*, although this is not always the case. Physicists are not yet settled upon the absolute nature of the spots, although from the cyclonic action always visible, we may be assured that mighty and unparalleled forces are at work.

Above this photosphere lies the *chromosphere*, which is the atmosphere proper of the sun, and which is composed of metallic vapors. By measurements with the spectroscope, this atmosphere is only one or two seconds of arc in thickness, corresponding to a depth of 860 or 1720 miles; a quantity only appreciable in the better instruments. This is the stratum which gives in the spectroscope the reversed or bright lines of the spectrum, indicating that the metals are there in a state of vapor. In the corona immediately above it, the spectroscope shows the usual dash lines of the solar spectrum, replacing the bright lines and indicating the absorption of the light rays from hem.

The views of various astronomers and physicists, Secchi, Young, Langley, Faye and others, were presented in regard to the constitution of the sun. Its mean density is only one-fourth that of the earth, and therefore not much denser than water. Taking into consideration the facts revealed by the telescope and spectroscope, and the immense amount of heat radiated into space it seems most probable that the sun is mainly a gaseous body with a crust or cloud of material in fusion; and that its heat is maintained by the contraction of its volume. It has been calculated that a contraction of four miles in its diameter per century, would develop heat sufficient to keep it at its present temperature.

Were it a solid mass, the heat would rapidly be dissipated, and in the body become cold and dead as our satellite.

Many other matters were detailed to the Academy, but we have no space at present to enlarge upon the subject. It was, however, very interesting to note how closely the observed times of the four contacts agreed with the predicted places, and how near the central line of totality the station was chosen or the instruments. These show how well the positions of sun and moon are given in the almanacs, and how thoroughly the mathematical details are understood and computed.

SOME MISTAKES.

BY MISS IRENE HARDY.

I WRITE these things, not out of a spirit of ill-natured criticism, or self-sufficiency, but for the chance that there may be in them hints to help beginners and others who wish every year to grow beyond the mistakes they are making. In visiting schools, in teaching, and at Teachers' Institutes I have gained as much from negative hints, as from actual good things presented. I have frequently corrected mistakes of my own, of which I was not conscious until I saw them made by others; I have sat in school-rooms, looking at other teachers, and mentally said, "There! I will never do that again in my school. I will never say that to any child again." And I was not ungrateful for the opportunity of learning so, although my own conceit may have been disturbed.

Further, the instances mentioned are either too far away in time or distance, or both, to point out any definite person, and therefore cannot hurt any, though they may touch some. I have seen a teacher with a stick in her hand, a bell on her desk, beating on the desk with the stick, or ringing the bell every few minutes, and accompanying the noise with, "Now, children, pay attention, (rap, rap, rap,) a noun, George, is a—(rap, rap,) what did you say a noun is? Now the class isn't paying attention, (rap, rap, rap,) I will have to give you some marks," etc. The same teacher wondered why her class was so noisy and inattentive.

I have heard various primary teachers say in the presence of their pupils, "I seen him," (this, repeatedly,) "You done it," "I have saw," "I haint got no pen," "Your hair is *nice*," (*sic*) "I'll learn you better," "Shut up," "He haint here," "You be," "You'll never be any account," "I'll cane you, good," "You are mistaken, if you think so." Then these teachers wondered at the bad English, manners, or morals of their pupils. If I had been a patron of such schools I should have asked for a re-adjustment of—say, environment.

I once saw a teacher report a boy for sulkiness and disobedience; she, herself, was cross and sulky at the time. She said the boy needed a whipping, I thought—what would you think? I have seen a teacher walking up and down between the rows of pupils in her room, all day long, like a keeper in a

menagerie ; by this means she had a good degree of order ; but I saw that she taught mechanically, with her eyes now here, now there ; her attention divided into forty-seven ways, because she had brought it about that no child could be trusted for one minute ; there was no interest, no enthusiasm in anything ; the laws of force and routine governed all, the influence of the spy prevailed. "Why do you stand all the time? You look tired and jaded." "O, I do n't, dare to sit down, they would be in an uproar in a minute. I always stand during school hours."

I saw that she was ignorantly destroying her own health, and using what strength she had, fruitlessly—an expensive outlay and no return in good results to those for whose training she was paid ; she was using her strength in repressing the energies which she should have directed ; she had little left for anything else. Any woman, who knows no better than to throw away her power in mere standing and perambulating is to be pitied ; it is an uncalled for and wicked waste.

I have heard of another teacher, who, like the one last mentioned, stood or walked continuously ; during a grammar recitation, she walked through the aisles, book in hand, and, as she came by each pupil, called out in a loud tone a the same time stooping over the desk and gesticulating, "What's a noun? What's a verb?" and so on. If she had known how she was throwing away her working capital, perhaps she would have cultivated a serener manner. I have seen good teachers who stood constantly, but they did not live long ; on the other hand, I have seen very poor teachers who sat all the time, and I know no good teacher who sits during *all* of school hours. But if I ever employ teachers in a school of my own, I will never hire man or woman who can control a class only when they are standing up. If the teacher is a good one, I want her to last as long as possible, and do the *sort of work* I want done—*not* standing and *not* walking ;* a stick or a machine can do that.

I have seen, year in and year out—(I have been one of them myself, in years gone by) teachers exhausted daily by their work ; generally, too, they carried home two bundles in the evening, one of papers to be corrected, after dinner, and a half hour's rest, by sitting up late ; the other, a bundle of worries about unmanageable pupils ; the latter bundle kept sleep away another third of the night ; after a few hours' sleep, a mere pretense at breakfast, the tired creature went back to her work—and how could she do it? I once knew a principal who reproved his assistants in the presence of their pupils, and at other times in the presence of the assembled teachers of the schools. And he actually complained because they did not manage their classes well ! He had never listened to that eminent teacher of teachers who said : "Be the only recognized authority in your own school-room ; the highest success is not possible any other way."

I have seen a child forced to tiptoe in school until its gait was spoiled, and feet and legs permanently injured ; I have seen a factory of round shoulders in many a school-house, in which it was the rule to fold the arms from five to eight times a day, for four or five minutes each time. I have seen a bright, handsome boy, afflicted with stammering, to a painful degree, far behind the

boys of his own age in attainment, driven to truancy and misery, because neither his parents nor his teacher knew enough to cure him; I have seen the same boy, taken by a teacher who did know, taught to breathe properly and fully, whenever he began to speak, cured and made happy, the equal of his brightest classmates, in attendance and standing.

I have heard of teachers who never looked at the lessons they were to teach, each day; "They are so simple," they said, "any one can teach a First Reader lesson." The truth is, "any one" cannot—no one can who does not think of the best way for that special recitation of that special lesson, beforehand. No two classes can possibly take *exactly* the same teaching—the same *shades* of teaching. I have heard some teachers say, "I am so tired of going over and over the same thing every year; it is so monotonous." There was monotony in the souls that said it, not in the thing; they did everything in the same way, no better, but worse than before, in that it was repeated; in other words, they were not going on, but around, in the beaten track of a dismal circle, into whose grooves they sank more deeply every year. That is simply awful.

There are better and pleasanter leaves in the book of my school memory; but from some of these I have learned; perhaps others may.

EDITORIAL DEPARTMENT.

A FEW SUGGESTIONS FOR SCHOOL BOARDS.

TEACHING, whether or not recognized as ranking with the learned professions, is universally considered by intelligent persons, the highest of the skilled occupations. As such, it comes under a system of economic principles, differing from those regulating operations like clerking or manual labor. These principles have been investigated and promulgated by Pestalozzi and Fröbel; by Herbert Spencer and Alexander Bain; by Horace Mann; and in our own day and land, by Dr. John D. Philbrick and John Swett.

It is not strange our public schools are no better when we consider that every two or three years, men are selected to control their organization who are profoundly ignorant of the very axioms of the science and art of education; unaware even that any such science exists, and that the art may reasonably be ranked with the practice of medicine or law. The wonder, then, is not that our schools are no better, but that they are not much worse.

For the benefit of the many boards of school directors, who are now engaged in reducing the salaries of teachers, we will state a few elementary principles, axiomatic in character, bearing on the subject of teachers and their salaries.

First—In professional work, the law of supply and demand, equalizes and regulates compensation, but does not fix it.

Second—A salary is fixed by the nature of the work to be done; by the qualities required of the doer; by the benefits expected to result from the doing.

Third—A compensation should be fixed, and teachers lifted to the salary—never reduce the salary to the capacity or ability of the teachers.

Fourth—Good teaching requires extensive scholarship and ability, rare and of the highest order.

Fifth—Teachers are now paid more than thirty years ago, and will be still better paid thirty years hence than now—because a growing civilization demands higher scholarship, more refinement of manner, a better adaptability for the work, and a more general determination to make it a life-labor.

Boards of directors misinterpret the popular demand for educational reform. The people want neither fewer nor cheaper schools. They demand better work for the money expended: they want value received for the outlay, be that large or small. "One hundred cents on the dollar" is the educational pass-word of the day.

Those boards of trustees who think that, by cutting down the salaries of teachers, they will still the popular cry, are but short-sighted economists, at the best. The people will be appeased, not satisfied. When the novelty of the reduction has worn off, they will discover that the remedy applied has not touched the evil. They will renew their demands for reform; they will see that cheap teachers are unreliable educational make-shifts; and that one principle stated by Adam Smith, years ago, in regard to all commodities, applies to teachers—*i. e.*, the best article is cheapest; the lowest-priced article is practically worthless.

Certainly, even the average school trustee, is n't stupid enough to imagine that a good school can be taught by one whose only claim to be designated teacher, is the possession of a diploma. From such a board, the people may well expect when they call for bread, to receive a stone.

QUINCY MAD.

CALIFORNIA has gone wild over the "Quincy system." On every side nothing is heard but Quincy. The community is perfectly satisfied the system is the royal road to learning, found at last. Ministers devote their Sunday evening lectures to elaborate expositions of the wonder; newspapers teem with explanations of the before unheard-of achievements of the educational panacea: and to cap the climax, an apostle of this new dispensation, from the favored clime itself, has for some time been here among us, and has recently offered us a share of the rich heritage.

This gentleman, with the characteristic modesty which distinguishes so many eminent Bostonians, and with a fluency of diction not at all uncommon in this glorious land of free speech, made a short address to the teachers of California, at their recent annual meeting in San Francisco. He prefaced his remarks by informing his hearers that they were, if anything, rather conceited and quite ignorant of matters and things in general. Now this struck us, both as surprising and unkind, as so many eminent visitors from Boston, from Rev. Joseph Cook down to Mr. John H. Slade, have lately taken such uncommon pains to talk us out of our self-esteem and enlighten us. He then intimated that he did not know much about our schools any way, as he had visited only a few classes—which he condescendingly remarked, "were quite well taught." He was satisfied, however,

that "the California schools are pretty much like the schools of the country generally";—these are below the average of Massachusetts schools;—which in turn ranked lower than the schools of Boston; the latter itself yielding the palm to far-renowned Quincy.

Mr. Slade then went on to say that the Quincy system was not practiced outside of Quincy: that some schools had one feature, *e. g.*, the word method; others some other, *e. g.*, the object system of teaching numbers; and so forth. "But," Mr. Slade urged, "only in Quincy have these features been combined into one harmonious system."

He further took occasion to contradict the report and correct the impression that the use of text-books had been discarded in the Quincy schools. This he said was not so: "text-books are not used in lower grades; we first teach children how to use text-books, and then, in the higher grades, put the books into their hands." This sapient, and evidently original idea, based, of course, on sound scientific principles, reminds us forcibly of the very common practice of first teaching a child to swim and then permitting him to go into the water.

However, these criticisms may be unjust: we don't know much here in California anyway. It is almost thirty years since the oldest settler of us all, came to this isolated community from Yale and Harvard, from Ann Arbor and Columbia, even from Oxford and Heidelberg and Berlin and Paris.

And one strange feature in our society is, that it has probably as large a proportion of college-trained men as any community of its size in the Union. This may account for the very familiar conceit which Mr. Slade recognized before he had been two weeks in the State.

The peculiarity of California, (perhaps its misfortune) is that Minerva-like, it started into being full-grown. These Bostonians (to a considerable degree) came here and made it what it is. Now, unless there is something in the air of the Pacific which makes men conceited, dogmatic, illogical (and when we heard Mr. Slade at Lincoln Hall, we were tempted so to believe) the California people have not changed much since they came here from their old homes, East.

But enough of this. A word about the Quincy method. As Mr. Slade acknowledged, in the course of his remarks, the different features of the method have long been known. Some schools have practiced one part of the system; some, another.

But we can go further. The *Sacramento Record-Union*, the most ably edited and usually the best-informed newspaper on this coast, to the contrary notwithstanding, there *are* schools in this State, not one or two, but many, where every essential feature *BUT ONE* of the Quincy system has been in successful operation for six years past. The word-method of teaching reading is almost universally employed. When the *Record-Union* and other dailies excite themselves about children tortured by learning their A B C's, they give themselves needless pain; not five per cent. of our primary teachers now teach reading by the alphabet method.

And the same may be said, though to a less extent, about the object system of teaching numbers (known to our teachers under the name of the Grube system) and the improved methods with geography and grammar and history.

There *is* one feature in the Quincy system, new in practice, in the United States, at least. And it is to this very part of the system that it owes all its efficiency and success. It is the last idea, too, our people generally are likely to adopt, or the press to advocate. In fact, our schools owe it to the newspapers

that this very point is not a more prominent and active feature in the California school system of to-day.

We refer to the rule established in Quincy of electing the most intelligent and best men in the community to the Board of Education; of keeping them there for many years; and giving them full control of their schools, without interference from either press or populace.

Nor is this all: the Board carry out the principle to its legitimate conclusion. They, in turn, elect the superintendent, and to him is entrusted the whole management of the schools and the control of their teachers. He can engage and dismiss teachers; he makes out the course of study, and dictates methods of teaching. In short, he is an educational autocrat.

As a school journal, and to some extent the mouthpiece of the teachers of this State, we declare ourselves ready and anxious for this whole Quincy system. But we insist on it that it shall not be shorn of its fair proportions; particularly, that this last and best feature of careful, competent, uninterfered-with supervision shall be carried out in all its entirety.

LEGISLATIVE PROCEEDINGS.

LITTLE real work has yet been done in Sacramento in the way of legislation. Many bills have been introduced amending the School Law, and bringing it into accord with the new Constitution. None of these have been finally acted on. What is known as the "Davis Bill" is probably the most complete. It provides for county boards of education to be appointed by the county supervisors, and to consist of four members, two of whom shall be experienced teachers. The county superintendent is the chairman of the board.

The main features of this law are good; we believe, however, that the power of appointment should be vested in the superintendent; and that all the members should be teachers.

This last clause, in particular, we shall insist on as no more than just to teachers and in the best interests of education.

The board is to hold office for two years, is required to adopt text-books, and to examine candidates for teachers' certificates. At least, two examinations and no more than four examinations, will be held each year. We believe this bill will pass.

Another bill to legalize existing certificates and to continue them in force was introduced in the Assembly, and passed by a vote of 63 to 11. This indicates the drift of sentiment, and encourages the belief that it will pass the Senate and become a law.

Assemblyman Carr of Yuba, a practical teacher of merit and ability, is the author of several measures for the interests of our schools. He introduced a concurrent resolution for the amendment of Sec. 7, Art. IX, which, we hope, will pass. This amendment will restore the State Board of Education, with its former authority to supervise the examination of teachers and to adopt text-books.

For the latter clause, we believe, teachers care but little. The right of teachers to be examined by their peers, and the re-establishment of a high, uniform professional standard for admission to their ranks, is of vital importance to the well-being of our schools.

The application of our national motto *E Pluribus Unum* may appropriately be

made here. While local government is undoubtedly best for the welfare of the governed, the perpetuity of our nation requires that in education there must be no State lines, still less, an infinite number of subdivisions within the limits of the same State. Every patriotic American, as well as every educator, will concede, that an *American* system of popular education, contemplates schools taught on the same general plan, in the same language, with the same ends in view, *i. e.*, to make intelligent men and women, and good loyal citizens.

We have already shown that Sec. 7 of Article IX breaks up our State system into as many parts as there are counties. We are somewhat surprised that a newspaper usually so intelligent and progressive as the San Francisco *Chronicle* should permit its approval of the new Constitution, as a whole, to blind it to this radical defect of the Article on Education. When the *Chronicle* attacks Mr. Carr's resolution, it mistakes the feelings and temper of the people. Prior to and immediately following the adoption of the new Constitution, we heard hundreds of its strongest advocates announce their disapproval of this portion of Sec. 7, and declare their willingness and desire to vote for an amendment at the earliest opportunity.

We learn that our experience in this regard is that of many others. If the *Chronicle* will examine this whole subject with the care it deserves, and free itself from the false impression that the frauds in teachers' certificates have something to do with this matter, we believe that it will come to a conclusion diametrically opposite its former position.

WINTER.

OUR school news is very meagre this month, owing to the unusually long winter vacation. The unprecedentedly cold weather has deferred the commencement of the spring terms; teachers as well as other folks are glad to stay in-doors and keep warm; and everybody looks with unwonted longing for the milder air of Spring. It will give our readers, in warmer latitudes, some idea of the severity of this winter, to state that at Lathrop in the San Joaquin Valley, about eighty miles from San Francisco, where there has never before (within the memory of any American settler) been snow on the ground, on the 27th and 28th of January, it lay for fifteen hours to the depth of three inches. Even as far south as Bakersfield and Visalia, the snow fell and remained on the ground to the depth of an inch. In San Francisco it snowed a little on the morning of the 26th; and on the 27th, 28th, and 29th, it was literally too cold to snow; ice remained unthawed in many places in the streets for two days.

So educational news, like other things, is frozen.

DUES FOR 1880.

NO bills for 1880 have yet been sent out from this office. We trust, however, that subscribers will not wait, but will favor us with prompt remittance of all dues.

THE MEETING OF THE STATE ASSOCIATION.

THE State Association, at the meeting December 29th, 30th, 31st, passed a resolution to publish their proceedings. A committee of five was appointed to make arrangements and supervise the publication. Of this Committee, John Swett of San Francisco is Chairman. The price of each copy was fixed by the Association at twenty-five cents, and the cost was to be defrayed by members, and teachers generally, taking as many copies as they desired. The publication has been undertaken by the JOURNAL, and the pamphlet will appear as soon as it is ascertained how many copies will be needed. Teachers who wish copies, may send in their names with twenty-five cents for each copy wanted, to Albert Lyser, 838 Market Street, San Francisco.

JANUARY NUMBERS WANTED.

DESPITE the many reductions in teachers' salaries, our subscription list increased so considerably in January that we are entirely out of numbers for that month. We need about fifty copies. Those subscribers who do not keep them for binding, and who will send us the January number, will have their subscription extended one month.

UNDER the head of "Teachers' salaries," *Barnes' Monthly* has the following very timely remarks: "There has been a conspiracy to ruin our public school system, and one mode of attack has been through the salaries of its teachers. The enemies of the system could not abolish it altogether, so they have determined to render it as inefficient as possible. In repeated instances, school accommodations have been kept miserable, all for the purpose of driving respectable children in disgust from the school-room. In many places the salaries of primary teachers have been reduced so low that it is almost a sacrifice of self-respect that any one can be induced to engage in the work of teaching. At present an ordinary maid-of-all-work, just from the country, can command a better salary than many devoted primary teachers, who are required to pass rigid examinations, and years in preparation."

We desire to call attention to the advertisements in this number of the JOURNAL. There are several new ones worthy of especial notice, for instance the splendid two-page exhibit of unsurpassed school furniture, advertised by Mr. George H. Fuller; the two pages occupied by A. L. Bancroft & Co., for various school text-books; the works advertised by the University Publishing Company; and Potter, Ainsworth & Co's. publications. The other pages are also worthy of careful perusal.

As we go to press, the following dispatch is handed us:

SACRAMENTO, Feb. 2d, 1880.

Bill declaring diplomas and certificates valid, just passed the Senate, twenty-three to four. Only wants Governor's signature.

FRED M. CAMPBELL.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

THE ELECTRIC LIGHT.—No new invention claims more of the public attention than the Electric Light. We are repeatedly informed by the public press that Mr. Edison has finally perfected a lamp which will give a light equal to a common gas burner, work satisfactorily, and be cheap. If this is true, he certainly has produced an article whose value cannot be overestimated, and he deserves and will receive the gratitude of the present and future generations. The greatest difficulty Mr. Edison, and other experimenters have had to contend with, has been to discover suitable material for a wick, and to arrange it in such a manner that it would be permanent and economical. All these requirements it is claimed are met in a carbon loop heated to incandescence *in vacuo* in a glass globe about two inches in diameter. Whether this will stand the test of time, the future only can determine.

AN English chemist claims to have discovered a cheap innocuous antiseptic that is an effectual preservative of butter, without the use of salt, and without resorting to the expedient of excluding it from the air. A churning of butter thus treated was exposed to the air without a particle of salt from the 24th of July last, to the 24th of October following, and upon examination was found to be as sound and sweet as when first churned. It is difficult to estimate the value of this treatment, if it is as effectual as its inventors claim. The producer has opened a more extended market, and the consumer in warm latitudes can be served with a better article than present methods render possible.

THE EARTH'S DAY INCREASING.—In a recent lecture on "Eclipse Problems," Prof. Charles A. Young, of Princeton, said, with reference to the observed increase in the rapidity of the moon's motion, that the discovery led at first to the opinion that the moon's orbit was growing shorter, and that ultimately the moon would come down upon us. More accurate calculation, however, shows there is no danger of so disastrous a result. The moon is not coming nearer, but our day is growing longer, owing to the friction of the tides upon the earth's surface. The tides act like a brake, and slowly diminish the speed of the earth's rotation.

WHERE THE COLD WAVES COME FROM.—Meteorological observations have now become so extended that evidence is rapidly accumulating to enable us to determine positively the source of the cold aerial waves which sweep across our country during the winter season. The indications are that we owe them to the great area of high barometer in northwestern Siberia, where the pressure sometimes exceeds 31.50 inches, and the temperature falls as low as 76° below zero. The pole of greatest cold is in the neighborhood of Yakutsk, on the Lena, where the average thermometric reading in January is 41° below zero, and where the severest cold exceeds by 10° that experienced by explorers in high arctic regions. This is also the region of the highest barometric pressure known in winter; and from it, doubtless, proceed the waves of intense cold which play so large a part in our winter experience.

CURIOSITIES OF EARTH.—At the city of Medina, in Italy, and about four miles around it, wherever the earth is dug, when the workmen arrive at a distance of sixty-three feet they come to a bed of chalk, which they bore with an auger, five feet deep. They then withdraw from the pit before the auger is removed, and upon its extraction the water bursts up through the aperture with great violence, and quickly fills a newly made well, which continues full, and is affected neither by rains nor drouth. But what is the most

remarkable in this operation is the layer of earth as we descend. At the depth of fourteen feet are found the ruins of an ancient city—paved streets, houses, floors, and different pieces of mason work. Under this is found a soft, oozy earth, made up of vegetables; and at twenty-six feet, large trees, with the walnut sticking to the stem, and the leaves and branches in a perfect state of preservation. At twenty-eight feet deep a soft chalk is found, mixed with a vast quantity of shells, and the bed is eleven feet thick.

PROFESSOR Cohn, of Breslau, has been making experiments with the electric light on the eyes of a number of persons, for the purpose of ascertaining its influence on visual perceptions and color-sensations. He finds that letters, spots and colors are perceived at a much greater distance through the medium of the electric light than by day or gaslight. The sensation of yellow is increased sixty-fold compared to daylight; red, six-fold; blue, two-fold. Eyes which can only with difficulty distinguish colors by day or gas-light are much aided by the electric light.

THE PLANETS IN FEBRUARY.—*Mercury* rises on the 6th at about the same time as the sun, and from this day until March 20th, he rises in daylight. He sets with the sun on the 17th, and from this day he gradually sets later and later, until the last day of the month, when he sets about one hour after sunset. He is near the moon on the 10th, and near Jupiter on the 29th. *Venus* is the morning star, rising on the 10th at 5 o'clock A. M.; on the 20th at 5 h. 14 m. A. M., and on the last day of the month at 5 h. 20 m. A. M. She is near the moon on the 7th, and in the descending nodi on the 29th. *Mars* sets on the 10th at 2 h. 56 m. A. M.; on the 20th at 2 h. 32 m. A. M., and on the last day of the month at 2 h. 17 m. A. M. He is near the moon on the 18th, and in quadrature with the sun on the 23d. *Jupiter* is an evening star, setting on the 10th at 8 h. P. M.; on the 20th at 7 h. 25 m. P. M., and on the last day at 6 h. 56 m. P. M. He is near the moon on the 12th. *Saturn* sets on the 10th at 10 h. 16 m. P. M.; on the 20th at 9 h. 33 m. P. M., and on the last day at 8 h. 57 m. P. M. He is near the moon on the 14th.

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

Mr. G. R. Bissell sends the following contribution :

There is one operation which can *sometimes* be of great use in simplifying the solution of equations, which is rarely mentioned by authors of Algebras. The operation is simply reducing improper fractions to mixed quantities.

Take, for instance, example No. 24, on page 92 of Davies' New Bourdon. The usual method, of first clearing the equation of fractions, is a long and tedious operation, as many a pupil has found out from experience; but if each fraction is first reduced to a mixed quantity, the operation is greatly simplified, as below :

$$\frac{x-1}{x-2} - \frac{x-2}{x-3} = \frac{x-5}{x-6} - \frac{x-6}{x-7}$$

When so reduced, becomes—

$$1 + \frac{1}{x-2} - 1 - \frac{1}{x-3} = 1 + \frac{1}{x-6} - \frac{1}{x-7} \quad \text{or,}$$

$$\frac{1}{x-2} - \frac{1}{x-3} = \frac{1}{x-6} - \frac{1}{x-7}$$

Reduce to c. d. and add the two terms of the 1st member, and the same in the 2nd member, and we have, after changing signs of both members,

$$\frac{1}{x^2-5x+6} = \frac{1}{x^2-13x+42} \quad \text{c. f. and we have}$$

$$x^2-5x+6 = x^2-13x+42 \quad \text{trans. and red.}$$

$$8x = 36$$

$$x = 4\frac{1}{2}$$

Again, take the equation,

$$\frac{7\sqrt{x+3}}{2\sqrt{x-3}} = \frac{6\sqrt{x+8}}{3\sqrt{x-5}} + 1\frac{1}{2}$$

In this, the first term of the numerator (in the 1st member) is not divisible by the first term of the denominator, so we multiply both *members* by 2.

$$\frac{14\sqrt{x+6}}{2\sqrt{x-3}} = \frac{12\sqrt{x+16}}{3\sqrt{x-5}} + 3$$

Red. fracts. to mixed quantities and we have

$$7 + \frac{27}{2\sqrt{x-3}} = 4 + \frac{36}{3\sqrt{x-5}} + 3 \quad \text{or,}$$

$$\frac{27}{2\sqrt{x-3}} = \frac{36}{3\sqrt{x-5}} \quad \text{c. f.}$$

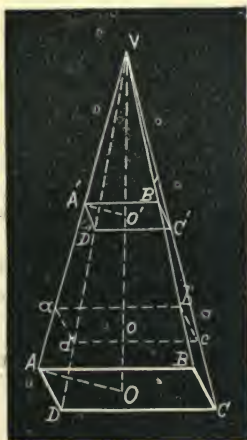
$$81\sqrt{x-135} = 72\sqrt{x-108}.$$

$$9\sqrt{x} = 27$$

$$\sqrt{x} = 3$$

$$x = 9$$

Mr. Parsons submits the following solution of Problem 27 :



The pole is a frustum 28 ft. alt. of a square right pyramid 56 ft. alt. For by similar triangles $AB-A'B' : AA' :: AB : AV$ and $AV-A'V : A'V :: VO-VO' : VO'$. As similar solids are as the cubes of their like dimensions, we have, sol. $V-ABCD : \text{sol. } V-A'B'C'D = \overline{VO}^3 : \overline{VO'}^3$, or as 8 : 1. Then the frustum $ABCD - A'B'C'D$ is to the sol. $V-A'B'C'D : 7 : 1$, and half the frustum $A'B'C'D - abcd$, will be as $3\frac{1}{2} : 1$. The solidity $V-abcd$ will be as $4\frac{1}{2} : 1$. But like dimensions of similar solids are as the cube roots of their solidities. Hence, $Vo' : Vo :: \sqrt[3]{1} : \sqrt[3]{4\frac{1}{2}}$, or, $28 : Vo :: 1 : \sqrt[3]{4\frac{1}{2}}$.

whence $Vo = 28\sqrt[3]{4\frac{1}{2}}$

$$O'o = 28(\sqrt[3]{4\frac{1}{2}} - 1)$$

and $Oo = 28(2 - \sqrt[3]{4\frac{1}{2}})$

$$\text{Computation.} \left\{ \begin{array}{l} \text{Log. } 4\frac{1}{2} = .653213 \\ \text{Log. } \sqrt[3]{4\frac{1}{2}} = .217737\frac{2}{3} \\ \sqrt[3]{4\frac{1}{2}} = 1.65096 \\ \sqrt[3]{4\frac{1}{2}} - 1 = .65096 \quad O'0 = 18.22688 \\ 2 - \sqrt[3]{4\frac{1}{2}} = .34904 \quad O0 = 9.77312 \end{array} \right.$$

$$\text{PROBLEM 28.} \left. \begin{array}{l} -x^2 + y^2 = 7 \\ x + y^2 = 11 \end{array} \right\} \text{To be solved by Quadratic methods.}$$

CORRESPONDENCE, NOTES, AND QUERIES.

THE NEW ENGLISH DICTIONARY.—In 1859 an appeal was made to the English speaking world by the Philological Society of Great Britain, to assist in the compilation of an Historical Dictionary. The raw material was to consist of quotations illustrating the use of all English words in all senses by all writers in all ages. These were written according to a uniform plan, on slips of paper the size of half a sheet of note. This appeal resulted in the accumulation of some two tons weight of slips. The project then slumbered, and now a new appeal is issued. The Delegates of the Clarendon Press, Oxford University, have assumed the entire financial responsibility, and Dr. Murray, their President, has undertaken to edit it, with the assistance of a corps of sub-editors. A thousand readers are now wanted to complete the reading. At least four or five hundred American readers are required, for the task allotted to this country—the latter half of the 18th century in English literature, and the whole of American literature.

We give two specimens of the slips. This is the earliest one of the word *castle*:

CASTLE, sb., *obsolete*. A village. 1000. Cott. Gosp., Matt, xxi: 2. "Farath on that castel."

This indicates that the word first appears in the year 1000, in the Cottonian Gospels, with the spelling *castel*, and meaning a *village*.

AGRIN, adv. 1879. W. D. Howell's "The Lady of the Aroostook," ch. viii, p. 80. "Half the ship's company were there, silently agrin."

A reader of Bancroft's History noted over two thousand words suspected of there making their first appearance.

Minute directions for readers are printed and will be sent to any one on application. Readers in the United States should communicate with Prof. F. A. March, Easton, Penn., who has charge of the work in America. The address of Dr. Murray is Mill Hill, Middlesex, N. W., England.

The Dictionary will be one of the great books of the world, and America should be represented in it. But the readers cannot be paid in money. Their postage only will be paid, and slips furnished them.

The first part, the letter A, consisting of several hundred pages, will be issued in 1882.

J. A. H.

EXAMINATION QUESTIONS FOR PUPILS.

PREPARED BY D. C. STONE.

[Deputy-Superintendent of San Francisco.]

GRAMMAR—SECOND-GRADE.

6. Give the method of forming—

- (1.) The passive voice.
- (2.) The progressive form of the active verb.
- (3.) The perfect and pluperfect tense of the indicative active.
- (4.) The perfect infinitive.

7. (1.) Johnson, the *author*, lived some *years* in the country, then went to London, and there became a noted *writer*.

(2.) The *struggling* moonbeams, *stealing* thro' the leafy branches, fell upon the calm faces of the dead.

(3.) The sudden *shivering* of my limbs warned *me* of the change of temperature.

Parse the italicised words.

8. Write—

- (1.) 2nd per. plu., 2nd fut., ind. of the verb *decide*.
- (2.) 1st per. sing. past imp. of the verb *become*.
- (3.) 3rd per. sing. pres. sub. of the verb *to be*.
- (4.) 1st per. sing. past perf. pot. of the verb *have*.

9. Correct and briefly give reasons |

- (1.) Who do you wish ?
- (2.) I expected to have gone there yesterday.
- (3.) It was very rainy to-day.
- (4.) Of what number are each of the following nouns ?
- (5.) Him and me don't agree.
- (6.) There ain't no such person nowheres about here.
- (7.) I am larger than what he is.
- (8.) He got to go home at once.
- (9.) It's no use to argue the matter.
- (10.) He dassent do it again.

10. Write good examples of—

- (1.) A compound interrogative sentence.
- (2.) A complex declarative sentence.
- (3.) A complex interrogative sentence.
- (4.) A simple sentence with a compound subject.
- (5.) Give the plural of each of the following words : *axis*, *miasma*, *automaton*, *money*, *tyro*, *news*, *Miss Brown*, *die*, *brother*, *family*.

(6.) Give the opposite gender of each of the following : *czar*, *steer*, *Su-lad*, *belle*.

(7.) A simple sentence with a *phrase* as subject.

(8.) A simple sentence with a phrase as object.

GRAMMAR—THIRD-GRADE.

6. (a.) I know *where there* is a good *coal mine*.

(b.) The man *whom* his friends call a good *fellow* is not always a good *man*.

(c.) A *freezing wind* made it impossible to cross the *prairie* that *day*.

Parse the italicised words.

7. Change to complex sentences—

(1.) The utility of the telephone is now acknowledged.

(2.) At the end of the concert the room was cleared for a dance.

(3.) Our neighbors being disturbed by the noise, we concluded to give away our parrot.

4. With prudence you might have saved money.

(5.) I imagine the man to be your friend.

8. Write a synopsis of the verb *see*, in the indicative and potential active, third person singular, with feminine subject.

9. Correct—

(1.) Him and me earns lots of money every Saturday.

(2.) Them books ain't your'n at all.

(3.) You've got to get your lesson.

(4.) Either Mr. Bond or Mr. Cole are sure to be there.

(5.) A fine lot of goods are to be sold at auction.

10. Write short sentences containing the following :

(1.) A noun in apposition.

(2.) A predicate adjective.

(3.) A predicate noun.

(4.) A conjunctive adverb.

(5.) A relative pronoun of the neuter gender.

GRAMMAR—FOURTH-GRADE.

7. (a.) Define the following, and give two examples :

(1.) A regular verb.

(2.) An irregular verb.

(3.) The participle.

(b.) How does a verb in the *active* voice represent its subject? A verb, in the *passive* voice? Give examples.

8. Give the mood and tense of each verb in the following :

(1.) Go, child of mortality, and ponder upon thy future.

(2.) I had sent the boy away before you came.

(3.) You shall not do this.

(4.) Then might have been heard the loud cries of distress.

(5.) If I were rich I think I should try to do some good.

9. Correct these ungrammatical sentences, and give, briefly, the reasons for the correction :

Model.—The pink smells *sweetly*. It should be: The pink smells *sweet*.
An adverb should not be used in place of a predicate adjective.

- (1.) Them apples are not fit to eat.
- (2.) Them books ain't yours.
- (3.) A ripe pear tastes deliciously.
- (4.) My cousin looks beautifully.
- (5.) Him and me are partners.

10. Write ten lines about the reception of General Grant. Tell where you were and what you saw.

NEWS RECORD.

OUR record closes on January 30th.

Foreign and Domestic.

Jules Favre, the eminent French statesman, died in January.

The newly-elected State officers of California were inducted into their respective positions on the 5th of January. The Legislature met on the same day. The Senate chose for President *pro tem* Senator George F. Baker of Santa Clara, an old teacher, and formerly county superintendent of that county. The Assembly elected J. F. Cowdery of San Francisco as Speaker.

The remarkably cold weather in California is resulting in great loss of sheep and cattle, as well as the destruction of much semi-tropical vegetation and delicate plants and trees.

Among the eminent persons deceased in January, was Frank Leslie, proprietor of the *Weekly* and several other publications.

Gambetta has been re-elected President of the French Chamber of Deputies.

General Garfield of Ohio was elected by the Legislature of that State, U. S. Senator, to succeed Senator Thurman. Senator Garfield is looming up as a Presidential candidate.

Another Cabinet crisis is reported in Mexico.

Great preparations are making at the City of Mexico for the entertainment of General Grant and party.

The work of surveying the route of the proposed Isthmus canal has been commenced.

The Republican Legislature of Maine recently elected and inaugurated Daniel F.

Davis Governor, together with the balance of the State officers.

Violent shocks of earthquake are reported in Salvador, doing great damage and causing much excitement.

Terrible distress prevails in Adrianople, fifteen persons having recently been found dead from hunger in one day.

The British and Portuguese troops are united in the suppression of the slave trade in Mozambique Channel.

General Grant and party arrived at Havana and were warmly welcomed.

The President has nominated John Russell Lowell of Massachusetts to be Minister to England.

Since the 8th inst the fighting between the Albanians and Montenegrins has been incessant.

Personal.

Miss Lucy Curtiss is said to be the ablest instructor in Ohio.

Professor William Borden, of New Providence, Clark county, Ind., has offered to build a \$4,000 school house for New Providence, and present the same to the township, on condition that the township should agree to keep up a nine months' school. Prof. Borden, once poor and a teacher in New Providence, has become immensely rich through Colorado mining operations.

Hon. A. L. Rhodes of San Jose has been appointed Regent of the State University.

Much pleasant chat has taken place in English and Continental circle on the ap-

proaching marriage of Baron Wentworth, a grandson of Lord Byron, and Miss Fletcher, the clever and pretty author of *Kismet*. Baron Wentworth is the younger of the two sons of Earl Lovelace and his wife Ada, Byron's daughter, and is now forty years old. The title of baron comes to him from his grandmother, Lady Byron, who was Baroness Wentworth in her own right. Robert Browning is a cordial friend of Miss Fletcher, and admirer of her literary work, and it was he who introduced Lord Wentworth to her among the Italian mountains last summer. The wedding is to take place this month in Rome as soon as the young American's new book is finished.

Since the above was written, the report comes that the marriage has been broken off.

Speaking of Mr. Bright, and his command of nervous English, a London journal says he has acquired it by almost learning by heart the works of the purest English writers. Some one once said in his presence that it would be difficult to find a man who had read through Milton's "Paradise Regained." "I have read it many times," he said, and then he proceeded to recite several magnificent passages from it.

Of the family of the late Charles Dickens there are five children who now survive. The eldest son, Charles, is the proprietor and editor of *All the Year Round*. His other sons are Henry Fielding Dickens, the barrister, well known on the Eastern Circuit; and Edward Bulwer Lytton Dickens, now a successful sheep-farmer in Australia. The daughters are Kate Dickens, wife of C. A. Collins, the author of *A Cruise Upon Wheels*; and Miss Mary Dickens. Two sons, also, are deceased, viz.: Walter Savage Landor Dickens, who died while serving as an ensign with the Forty-second Highlanders in India; and Sydney Smith Dickens, who died a lieutenant in the navy. It will be noticed that Dickens named four of his sons after writers as eminent as himself in English literature. Bulwer Lytton, indeed, was god-father to the youngest of them.

"Cheiloangioscopy" is the rather perplexing name given to a new process, recently discovered, by which the circulation of blood can be actually observed. By means of a simple arrangement invented by Dr. C. Huter, of Griefswald, the actual flow of the blood in the blood-vessels may be seen with sufficient accuracy to detect any abnormal action.

The late Mrs. Oliver Dyer, of Saco, Maine, left \$30,000 to establish a public library in that place.

The late John Blackwood occasionally used to relate with quiet glee how he and

George Eliot had corresponded some time before he knew she was a woman. "I called her 'Dear George,'" he said, merrily, "and employed some easy expressions, such as a man uses only to a man. After I knew her, I was a little anxious to remember all I might have said."

The illustrated lectures of Professor R. A. Proctor, the famous English astronomer, in New York and various other places, are of great interest. The subjects of his New York lectures give an idea of the general topics treated by this popular scientist: "The Poetry of Astronomy," "The Immensity of Space," "The Vastness of Time," "Other Worlds and Other Suns."

Now it is reported that all Egypt was amazed when the Khedive gave to New York that wonderful and ancient obelisk, which is on its way hither, or will be soon. It is one of the oldest obelisks in the world, and about seventy feet in height.

Educational.

Miss Helen Taylor, step-daughter of John Stuart Mill, Mrs. Lucas, sister of John Bright, and Mrs. Fawcett, wife of Mr. Fawcett, the blind member of the House of Commons, are members of the London School Board.

M. Jules Ferry, French Minister of Public Instruction, has written to the Prefects, ordering them to organize a system of medical inspection for the primary schools. This wise thing might well be done in other countries.

Three hundred years before education had made much progress in the United States, there was a school in every parish in Scotland, but twenty years ago the schools of our country were better than in Scotland; now the Scotch claim that their schools are better than ours. Dr. McCosh says that Scotch schools can do what they cannot do here—they can prepare students for college.

The National Educational Association will hold its next annual meeting at Chattanooga, N. Y., beginning Tuesday, July 13, 1880.

President Eliot recently addressed the Massachusetts Teachers' Association in advocacy of a long tenure of office by teachers, this long tenure implying intelligent selection with strict examinations and a probationary service. He also asked for a retirement of teachers on pensions or annuities, with absolute security against a reduction of salaries, thus freeing the teachers from anxiety, and leaving them to devote all their powers to their work. The Association unanimously approved the formation of a National Council of Education.

A public school with forty native pupils has just been opened at Sitka, Alaska. The children are said to be very apt and make good progress in learning English.

A series of twelve lectures is in progress at Washington University, St. Louis, on art and cognate matters, illustrated by stereopticon and crayon views.

There are at present two school teachers in the House of Representatives at Washington.

The trustees of Laselle Seminary, Mass., have engaged Miss Parloa to give lessons in cookery during the next term beginning early in January. Another step forward in practical education.

From Pennsylvania we learn that the Daphin County Penn. Teachers' Association have established a fund for the benefit of those who have grown old in the profession.

The school teachers of Mercer County, Pa. have struck against the system of "boarding around," and the directors, we understand, have sustained the "strikers."

Kansas has just passed through an educational campaign of institutes, public meetings and lectures. Out of 6,700 teachers employed by the State, over 6000 were in attendance at the institute meetings. The State is making a splendid showing in Normal Institute work.

Maryland asks for a more extended curriculum in her common schools.

Mr. W. E. Foster complains that the English schools above elementary schools, especially for girls, are in a sad condition, and adds that America has in many respects an advantage over England in point of education and particularly with regard to girls' schools.

The sixth annual report of the Scotch Education Department has lately been issued. The average attendance in Government schools in Scotland during the year was 377,250. The report shows progress in every department. The average Government grant per scholar has advanced from 15s. 8½d. to 16s. 9d., and that for the current year is estimated at 17s. 9d.

Amherst College received Christmas gifts amounting to \$106,000.

There are in Chicago 118 half-day schools, with an enrollment of 6,851. The enrollment in all the public schools is 46,307, 1,257 being in the high schools, and 9,083 in the grammar schools. The number of teachers is 870.

The Choctaw Nation, which numbers about 17,000 people, has forty schools and two academies. It also pays for the college

education of twenty-two students in the States. The office of Superintendent of Education is elective, and has been held by a Choctaw for four years.

Superintendent Mabbett, of Rochester, calls upon the board of education of that city to order that a detail of one or more teachers be required to spend the entire noon recess upon the grounds and halls of their schools, preventing the children by their presence from indulging in rudeness, cruelty or profanity.

In spite of the immense amount of money annually expended for the public schools of New York a large number of children have to be turned away because there is not room for them in the already over-crowded school buildings. In one ward alone of that city 1,536 children are excluded for want of room.

Seventy-four pupils are educated at the Sam Houston Normal School at Huntsville, Texas, free of charge, to become teachers in the public schools. The legislature has appropriated \$14,000 for the purpose, and the Peabody Fund gives \$6,000 more, making \$20,000 a year for this great and beneficial work.

At the recent elections for members of the London School Board nine women were elected.

Educational Diversions.

Professor in Roman history—"Mr. V——, for what was the war with Pyrrhus remarkable?" Mr. V——: "I think that it was the first time that the Romans ever saw the elephant."—*Cornell Era*.

Some students think it necessary to be behind in their lessons in order to pursue their studies.

During a school inspection at a town in Staffordshire where some Mormons had been lecturing, the Inspector asked the boys why a man should have only one wife. "Because no man can serve two masters," was the prompt reply.

A Returning Board.—The school-master's shingle.

Uncle Peter.—"Well, my boy, how do you like the teacher?"

Master Tom.—"Not at all! He knows nothing, and asks me everything. He asked me to-day who discovered America."

A school teacher, who was just telling the story of David, winds up with: "And all this happened over 3000 years ago." A little cherub, its blue eyes dilated with wonder, after a few moments' thought: "Oh, dear, marm, what a memory you must have."

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SANTA CLARA COUNTY.

SCHOOLS OF SAN JOSE AND VICINITY.—

A representative of the HOME AND SCHOOL JOURNAL recently paid a visit to the schools of the Garden City, and was more than pleased to note the evidences of progress and prosperity apparent on every side in matters educational. Whatever else San Jose and vicinity may be lacking in, (and we are not sure it lacks in anything), it is very evident that it does not lack in good schools, both public and private. For general intelligence and culture we see no reason why it may not safely contest the right with the City of Oaks to the title of the Athens of the Pacific. The public school buildings are all exceptionally well built, handsome and capacious structures, having spacious grounds connected with them.

The State Normal School first occupied our attention. Prof. C. H. Allen the Principal, and Prof. H. B. Norton kindly gave notes of interest concerning the school, and gave access to the various departments. There are now in the Normal department, 346 pupils. This does not include a large department of younger pupils, upon whom the embryo teachers practice. The present senior class numbers forty-eight, of whom six are young men. The Board of Instruction numbers fourteen well-known teachers.

In the High School there are now about 190 pupils, and 14 in the senior class. Mr. J. G. Kennedy, the Principal, is assisted by two other teachers, and he is also general principal of the Grammar and Primary Departments in the same building. These departments have each respectively four and two teachers, whose pupils number into the hundreds.

The First Ward School, Miss Kate Blythe, Principal, has 280 pupils and six teachers, all ladies. The Second Ward, or Empire Street School has 220 pupils, and five teachers, Mr. H. A. Saxe being principal. The Third Ward, or Reed Street School is presided over by Mrs. B. L. Hollenbeck, prin-

cipal, and five other lady teachers, the pupils numbering 285. Mr. G. E. Light-hall is principal of the Fourth Ward School, and with six other teachers trains over 300 young ideas. None of the Ward Schools have classes above the second grade. In some of them there are half-day classes in the lower grades, so arranged that teachers give their attention to one grade in the morning and another in the afternoon, economizing time and school room. There are also small public schools on Second Street taught respectively by Miss Lucy Houghton, and Mrs. Mary C. Hart. From City Superintendent Finch's report, we find that there are 2,329 pupils enrolled in the public schools.

The public school in Santa Clara is still under the able principalship of Mr. E. Rousseau, who has a corps of eight teachers, and an army of about 500 pupils. Besides all the public schools, the private institutions enjoy considerable fame. The University of the Pacific, the Methodist College between San José and Santa Clara, has a prosperous appearance, and expects to graduate a good sized class in June next. There are 140 students now in attendance. The Faculty numbers twelve teachers, with C. C. Stratton A. M., as president. Of the Catholic institutions—there are two—one in Santa Clara and the other in San José. They were founded in 1851 by the old Franciscan Fathers, and are wealthy schools. The Santa Clara College has about 300 young men in attendance, and the convent or college of Notre Dame in San José, has nearly an equal number of young ladies.

Besides these larger institutions there are a number of other private schools, including Prof. Worchester's Business College, Prof. Breisen's Cosmopolitan School, Rev. Mr. Babcock's Classical School for boys, Mrs. McGeehee's Home School for young ladies, (the two just mentioned were formerly one, under the title of San Jose Institute), two young ladies' schools, conducted by Miss Castleman and Miss Leffler, and a mixed school in Santa Clara, taught by Rev. Mr. Collins. These private schools

generally, seem thriving, notwithstanding the excellent opportunities in the public schools. Altogether the school-going population numbers upwards of 4,000. This large percentage is partially accounted for by the large number from abroad attending the colleges and private schools, and otherwise accounted for by the general excellence of the schools as a whole, and the prolific tendencies of the San Jose climate, which has so scared Brother Owen of the *Mercury*, that he has written and is now delivering throughout the State, a lecture on the evils of over-population.

NEVADA COUNTY.

The Boca school has a new teacher, David Ogilvie. The last teacher, Minnie A. Lewis, of San Francisco, was married on Thanksgiving day, to C. A. Green, one of the Trustees.

The school is ungraded, and has thirty scholars, doing well for a small place. The school library contains 117 choice books.

Grass Valley has nine hundred and eighty-seven school children.

COLUSA COUNTY.

The Webster School Building at Colusa, cost \$20,000, and accommodates 400 pupils. Mr. G. A. Kern is the principal.

SANTA CRUZ COUNTY.

Mr. S. Raney is the principal, and M. L. Wiley assistant teacher of the Corralitos School, which had an average daily attendance of forty-six last term. It re-opens the middle of next month.

STANISLAUS COUNTY.

The Teachers' Association of Modesto recently adopted the following:—

Resolved, That the cause of education would be greatly promoted by having the teachers employed by the year instead of by the month, and by paying such salaries as will induce them to remain in the profession.

SAN FRANCISCO COUNTY.

Miss Mary Cooke, who taught vocal music in the San Jose Institute in 1865, is one of the musical stars in the Melville Opera Troupe, now performing at the Bush Street Theater in this city—her stage name being Miss Annie Montague.

It is with deep regret that we record the death, in January, of the only child of Prof. Volney Rattan, of the Girls' High School. This child, a lovely little girl, five years of age, was the embodiment of beauty, joy, and activity. One day the picture of health, the next, scarlet fever laid her on her death-bed. The sincere sympathy of many friends are with Prof. Rattan and his estimable wife in their great sorrow.

A. C. Bloomer, substitute teacher in this city, has accepted a position in the Sandwich Islands. Mr. Bloomer is a first-class teacher, and found that Hawaii offers better inducements in the way of salary and promotion, now, than San Francisco.

The great event of the month in this city is the wholesale reduction in the salaries of teachers. At one fell swoop, the ax has fallen; and the progress of thirty years is practically nullified. In some instances, teachers lose forty per cent. of their salaries; many primary teachers lose from twenty per cent. to thirty per cent.; principals and high school teachers lose ten per cent., and grammar school teachers average about eighteen per cent. All premiums for experience have been abandoned; and the most important grade in the whole school organization, the eighth grade primary, receives the lowest salary.

In addition, the city treasury will hereafter benefit by the misfortunes of teachers. If they are sick, they lose one-twentieth of their salary for each day's absence. They are paid, it is true, by the calendar month, and actually work twenty-two or twenty-three days—so the city makes a clear profit every time a teacher is absent.

This is putting teachers two or three steps lower than clerks or regular employees in respectable business houses. In such institutions, an employe loses nothing by even two or three days' absence; the burden of illness or misfortune is never increased by unnecessary exactions.

In the discussions in regard to these reductions and changes, we must commend in the highest terms the attitude and arguments of Director L. H. Van Schaick and Superintendent John W. Taylor. The position assumed by these gentlemen is based upon a thorough knowledge of the

needs of our public school system, and a sincere desire that that system shall not be rendered inefficient by an unwise and misdirected economy; (*so called.*)

ALAMEDA COUNTY.

Oakland evening schools have been abolished.

SONOMA COUNTY.

Miss Maggie Windsor, formerly of Healdsburg, has been elected School Superintendent of Spokane, Washington Territory.

SISKIYOU COUNTY.

The Mugginsville school-house at Scott's Valley was destroyed by fire last month.

HUMBOLDT COUNTY.

The schools of Humboldt county, and the teaching profession of the Pacific Coast, suffer a great loss in the death of Mrs. W. G. Bonner, first assistant in the Eureka schools. Mrs. Bonner was a lady of refinement and culture. As a teacher she had no superiors and but few equals. Her place in the school and in the Eureka community, will not easily be filled. Her husband and family have our sincere sympathy.

MONTEREY COUNTY.

W. H. Benjamin is teaching the Soledad school

Life diplomas have been awarded to D. K. Edwards of Gonzales and Miss A. A. Wibble of Salinas.

In this county there are forty-six schools, giving employment to sixty-two teachers at an average salary of \$80 per month.

SACRAMENTO COUNTY.

In Sacramento city, there are now about 3,500 pupils enrolled on the registers of our public schools. These are taught in one high school, two large grammar, and a number of ungraded schools. The principal of the high school is O. M. Adams; Kirk W. Brier is vice-principal; and Mrs. S. S. Folger and Miss Carrie W. Roberts, assistants.

The Sacramento grammar school, under the able principalship of A. H. McDonald, aided by Miss Mary J. Watson, vice-principal, and other excellent teachers, is doing fine work. It is an ornament to Sacramento, and ranks among the best schools of the coast.

The Capital Grammar School, Jos. W. Johnson, principal, has a number of superior teachers, some of whom, like Mrs. Laura H. Wells and Mrs. S. P. Byrod, have already been named in the JOURNAL. The total number of teachers now employed in the city is seventy-nine.

BOOK NOTICES.

PUTNAM'S ART HAND-BOOKS. Edited by Susan N. Carter, Principal of the Woman's Art School, Cooper Union. New York: G. P. Putnam's Sons. San Francisco: A. L. Bancroft & Co.

The little book before us is entitled "The Art of Figure Drawing," and is one of the series of art hand-books published by the Putnams, New York. The price is about 60 cents.

This book is a reprint from the twenty-first London edition. It contains clear, precise, and brief instructions for a course of study in figure drawing, by Charles H. Weighall, and is illustrated with seventeen wood engravings by W. G. Mason.

For teachers who are making an effort to train themselves in a systematic and complete course, this little manual, we are sure, will prove invaluable. It will be a useful

aid, too, in the instruction of the classes of high schools and academies.

APPLETON'S DICTIONARY OF NEW YORK AND VICINITY. New York: D. Appleton & Co. San Francisco: James T. White & Co., No. 107 Montgomery St.

This little book, price 30 cents, contains in 234 pages, an accurate and complete description of the metropolis of the New World. It includes a street directory, descriptions of all noted buildings, parks, etc., with directions how to reach them. The traveler will find this book of the greatest service.

MONDAY MORNING. New York: Henry Holt & Co.

This is a carefully prepared, well-printed, and attractive little series of reading lessons

published, as the name indicates, in numbers, each part to be placed in the hands of pupils on Monday morning.

The idea is an excellent one. Children get fresh and interesting reading matter, and so far from discarding their readers find these weekly sheets a valuable auxiliary to them. We know of a few teachers who use these periodical sheets, or Shorey's Monthly Reader, and who speak in the highest terms of both. The subscription price of Monday Morning is very low—merely nominal. Good primary teachers will find them of especial value with small children.

THE ELEMENTS OF ALGEBRA. By F. A. Shoup, Professor of Mathematics in the University of the South. New York: E. J. Hale & Son.

Students of the higher mathematics will find this an exceptionally good work. The arrangement has the merit of originality; there is no padding in the book in the shape of hundreds of useless examples; principles are stated concisely and in the clearest language; and the author evidently constructs his book on the principle that algebra is an introduction to the higher mathematics, not a sequel to arithmetic. To show the treatment of the subject we will give the head of each of the ten sections into which the book is divided: I. Definitions and Explanations; II. Algebraic Terminology; III. Treatment of the + and—Signs; IV. Monomials, Exponents, and the Signs \times and \div ; V. Transformation of Polynomials; VI. Roots of Numbers; VII. Equations; VIII. Symbols o and ∞ ; IX. Progressions, Ratio and Proportion; X. Logarithms.

AN ELEMENTARY GREEK GRAMMAR. By William W. Goodwin, Ph. D. Eliot Professor of Greek Literature in Harvard College. Boston: Ginn & Heath. Oakland, Cal.: F. B. Ginn.

The exquisite style in which this book is presented, the fine paper and clear type, would of themselves dispose the reviewer to a favorable verdict, were we not already aware, from the success achieved by the first edition issued in 1870, that this is, *par excellence*, the Greek grammar of the country.

It is hardly as a revised edition of the former work that we must consider this book. Almost one-half the matter appears to us new, and there are changes, some of them important. We defer the extended review to which this book is entitled, to our March number. It is already the text-book in our best high schools, and will undoubtedly be used in every school where Greek forms part of the curriculum.

GRADED LESSONS IN ENGLISH AND HIGHER LESSONS IN ENGLISH. By Alonzo Reed, A. M., and Brainerd Kellogg, A. M.

These books are based on the fundamental principle that the object of grammar

is to teach the correct *use* of language. Among the best teachers, all the country over, there is a revolt against the teaching of the science of language. Almost a century of experience has shown that only by actual practice in writing and speaking, are accuracy and facility acquired.

Profs. Reed and Kellogg are practical teachers, and their books effect a revolution in the old style of grammar teaching. The gist of these books, to quote the language of the authors, as found in the preface to the "Higher Lessons," is "to make the Science of the Language tributary to the Art of Expression." To accomplish this, the definitions and principles, stated in the briefest and most exact manner, are fixed in the mind by an exhaustive drill in composing sentences; expanding, contracting, re-arranging their parts; punctuating and criticising them. Grammar and composition go hand in hand here, being taught together. In analysis, a system of diagrams is given; though, as we are pleased to see, this forms no essential part of the books.

The grading of the books is excellent. The primary work can be used with advantage for children of ten or eleven, and the higher work continues in a logical, systematic order through the grammar school as far as the high school.

In the way of questions for review and examination, both books are well supplied.

YOUNG FOLKS' HISTORY OF THE UNITED STATES. By Thomas Wentworth Higginson. Boston: Lee & Shepard.

So large a number of histories have lately been sent to this office for review, that there must be an impression among publishers that extensive changes are contemplated in our text-book on that subject. Some of the books received are practically worthless, some indifferent, a few excellent. To this last named class belongs Higginson's "Young Folks' History of the United States." Perhaps we can best describe this book by telling what it is not. If a cram-book of dates and events is needed to teach history, this book will not do. If a partisan record devoted to keeping alive sectional animosities, then this book will not suit. But for the story of our country, told in simple, interesting style, making a book that will bear reading aloud either at the fireside or in school, we can heartily recommend this book. It will inculcate the soul of history, and not its skeleton.

A LATIN PRIMER: Introductory to Gildersleeve's Latin Series. By B. L. Gildersleeve, Ph. D., LL. D. University Publishing Company: New York.

The whole series of Latin books of which Prof. Gildersleeve is the author, though of recent publication, has attracted much attention and secured general adoption, on

account of their many and varied excellence.

The Primer is the most recent of these works. It is intended as an introductory book to the Grammar. Its course, complete in itself, furnishes a general and extensive introduction to the mass of the Latin tongue, through constant and thorough drill in forms, with a minimum of syntax. It seems to us that this would prove a valuable introduction to almost any series of Latin books. The vocabulary, we notice, is unusually full and well arranged.

THE CHATAQUA TEXT-BOOKS.

We have received from Rev. J. B. Hill, No. 931 Market Street, a full set of text-books prescribed for the course of study of the C. L. S. C. We have space to name but a few of these little ten club manuals, *e. g.*; Dr. Vincent's "Biblical Exploration, and Greek History;" Prof. Wm. F. Phelps's "Froebel, Pestalozzi;" Horace Mann's "Education;" Dr. Henry W. Warren's "Studies of the Stars;" Prof. Albert S. Cook's "Anglo-Saxon;" and Dr. A. D. Vail's "Greek Literature." We very heartily recommend these little *brochures* to the attention of our readers, not already members of the C. L. S. C. In a very simple, concise form, and for a price merely nominal much valuable matter is comprised.

LITERARY NOTES.

The February *Scribner* is a wonderful number. For beauty of illustration, and rare literary excellence, the articles challenge comparison with any other publication, past or present, in the world. It is necessary to name but two of the contributions as an index of the whole: Eugene Schuyler's illustrated History of "Peter the Great," and Mrs. Burnett's story, "Louisiana," which, by the way, is the name of the heroine.

The February *St. Nicholas* is the companion piece to the *Scribner*. *St. Nicholas* is a magazine, *sui generis*; there is nothing to which it can be compared. If American parents but realized how effective such pure and bright literature is to banish the mass of impure trash now inundating our homes, there would not be a fireside without *St. Nicholas*. In this number, Alfred Tennyson has three poems; Miss Alcott has a story; Mrs. Burnett has a bright story, "Editha's Burglar;" Elizabeth Stuart Phelps has a story, and so on.

The February *Atlantic* is the finest number issued for many years. To read and enjoy the *Atlantic* requires a clean literary taste; it speaks well for the American public that so classic a magazine has thrived on this side of the water.

The February *Atlantic* contains in addition to its new quota of 144 pages, a supplement giving a full account of the HOLMES BREAKFAST, with speeches, poems, and letters of that very interesting occasion. Several new chapters are given of Mr. Howell's

serial, "The Undiscovered Country." Mr. Longfellow's poem, "Helen of Tyre," in the measure of "Sandalphon," is one of the most pleasing poems he has ever written. Richard Grant White has a curiously interesting article on "Antonius Stradivarius and the Violin." Goldwin Smith contributes a striking essay on "Pessimism." C. P. Cranch, the poet, writes an interesting and instructive essay on "Wordsworth." Miss Woolson has a short story, "The South Devil," which no lover of good short stories should miss.

There is a steady improvement in *Lippincott's Magazine*; and both in illustrations and in the character of the articles, does the February number take high rank. Among the papers particularly noticeable, are "Summerland Sketches; or, Rambles in the Backwoods of Mexico and Central America," by Dr. Felix L. Oswald. "Adam and Eve," a deeply interesting serial story, by the author of "Dorothy Fox." Part II. "Old and New Rouen," illustrated. An entertaining paper on one of the most picturesque of the French provincial towns, by Edward King. "A Future Capital of the United States." An article discussing the claims of Kansas City as the future seat of our government. "His Wife's Nearest Relation;" a love story, by Margaret Bertha Wright. "Wildwood Studies" An amusing sketch of life in the backwoods of Virginia, by Maria P. Woodbridge. "The Bonapartes in Exile." A very interesting paper on this interesting family, by Arthur Venner.

The *Appletons' Journal* for February contains "A Stroke of Diplomacy," a story from the French of Victor Cherbuliez; "The Comedy Writers of the Restoration," "Miracles, Prayer, and Law;" "First Impressions of the New World," by the Duke of Argyll; "The Russian Gypsies," by Charles G. Leland; and the serial, "The Seamy Side;" and others of less interest.

Among the nineteen departments of the February *Popular Science Monthly*, there are the usual large percentage of first-class contributions. Among them, we must name, "Saporta's World of Plants Before the Appearance of Man." "How Typhoid Fever is Conveyed;" "John Stuart Mill," by Alexander Bain; "Daylight in the School-room;" "Hygiene in the Higher Education of Women;" and "Artesian Wells and the Great Sahara."

The new western magazine, the *Californian*, starts out with a host of contributors and a rare selection of matter, that augurs well for success. Among other articles in the February number are, "How Gardens Grow in California," by Josephine Clifford; "Prehistoric Treasures," by B. B. Redding; "The Seven Cities of Cibola," by Theodore H. Hittell; and a pleasant story by Margaret Collier Graham, entitled, "A Clerical Tramp."

The Western Journal of Education published by J. Fred Waggoner, at Chicago, made its first appearance with the new year. We have received the first number. It is a very neat and well-conducted monthly of twenty pages.

THE PACIFIC School and Home JOURNAL.

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VOL. IV.

SAN FRANCISCO, MARCH, 1880.

No. 3

HOW TO DISSECT AN EYE.

BY VOLNEY RATTAN.

[Teacher of Natural Sciences, Girls' High School, San Francisco.]

THE eye of an ox can be easily dissected so as to show its principal parts and their relations to one another. A knife with a sharp narrow blade is the only instrument required.

That the reader may the more easily understand the directions, I shall preface them with a brief description of the most wonderful of vital organs.

Fig. 1 shows the size and general appearance of an ox's eye after the muscular and other attachments have been removed. The principal coat, which has the thickness of calfskin, is remarkably tough and inelastic. A portion of this in front, called the cornea, is transparent and has greater convexity than the remaining opaque portion, to which alone the name sclerotic is usually applied, though the two form a continuous coat. The exposed portion of the eyeball is covered with a continuation of the conjunctiva, a thin and exceedingly sensitive mucous membrane which lines the eyelids.

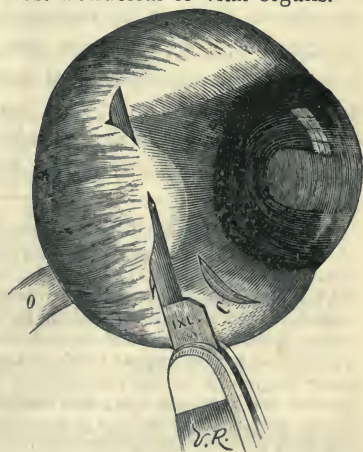


FIG. 1.

Through the cornea may be seen the iris, which is but a continuation of another membrane called the choroid. This coat lines the sclerotic, to which it grows fast along the circumference of the cornea. Back of the cornea the two coats are quite free for half an inch or more; but, farther on, they adhere more and more closely as the optic nerve is approached. It is not difficult, however, to separate them at any point. The outer layer of the choroid is made up of cells filled with a sepia-like coloring matter; internally it is very smooth and mostly of a green color.* Just back of the iris is a double-convex lens surrounded by a ring called the ciliary process, which connects the latter with the choroid, thus dividing the eye into two chambers. The anterior chamber is filled with a liquid almost as limpid as water; the posterior contains the vitreous humor which resembles the white of an egg. Enclosing the vitreous humor is a very thin, transparent membrane, between which and the choroid, but entirely free from both, is the filmy, creamy-white retina upon which the crystalline lens projects images of all that is seen. The optic nerve (O, Fig. 1.) piercing the two outer coats terminates in the retina. The pupil, an oblong horizontal opening through the iris, admits light to the posterior part of the eye.

Holding the eye by the adhering muscle and fat in such a way as to keep the front well filled out, you may first show the cornea. Cut loose with the point of a knife a bit of the conjunctiva near the edge of the cornea, that its presence may be demonstrated. Speak of the extreme sensitiveness of this membrane as shown by the effect of a little dust or smoke.†

After removing the fleshy matter, which is easily done by cutting close to the sclerotic, hold the eye in the left hand and cut squarely into the sclerotic as represented at C Fig. 1. Cautiously deepen the cut until the choroid shows as a dark line. Then, holding the eye so as to keep the sclerotic loose around the cut, carefully insert the point of the knife between the coats with the back toward the choroid; cautiously push it along half an inch, and, cutting upward against the underside of a table or piece of board, force the point through the sclerotic as shown in the figure. Pull the knife out and examine the first cut to see if the transparent vitreous humor protrudes from a break in the choroid; if so, with great care, insert the knife in the second incision; push it between the coats to a point farther from the cornea, and cut through the sclerotic as before; only, now you may make the cut extend the entire half inch. If the choroid is not broken in this large cut it will be easy to cut half an inch at a time, so as to turn down a piece, as shown in Fig. 2, exposing the

*I suspect that, in the living eye, the color changes, chameleon-like.

†Since there is so much to learn about the eye, it would be best to make about three lessons of it. Let the first lesson be confined to what may be learned from the eye without dissecting it. Find out all the children know about the shapes of pupils in the eyes of different kinds of animals. Let them see in their neighbors' eyes how the pupils contract when turned toward the light and expand when turned away from it. Explain why this is so; why blue eyes may appear black in anger or other excitement; why cats and owls have power to greatly enlarge the pupils of their eyes, etc. Show the attachment of the four muscles that move the eye; and that these muscles, with fatty matter, make a soft cushion for the protection of the eye in its socket. Force a needle through the cornea near one side and, with the point, move the iris so as to make clear the fact that it is in a space filled with a watery liquid.

choroid. Scrape this with the edge of the knife to remove as much of the sepia-like coloring matter as possible. Darken the room and hold a lighted candle in front of the eye at such a distance as will bring out the small inverted image most distinctly. If possible, have ready a simple magnifying glass and a piece of oiled paper to show that a lens will give an inverted image of the candle flame upon the paper similar to the image seen through the choroid. Next, cutting as before — always upward

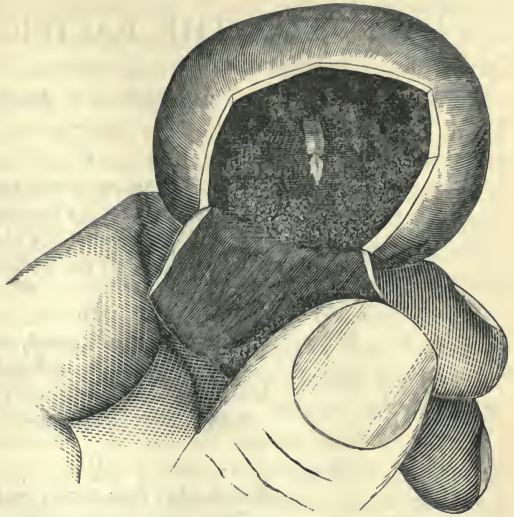


FIG. 2.

against a piece of wood—remove the larger portion of the sclerotic as shown in Fig. 3. Some care will be required in separating the sclerotic from the choroid near the optic nerve. Many little blood vessels and nerves which tie the coats together must be cut. The optic nerve must be carefully cut across

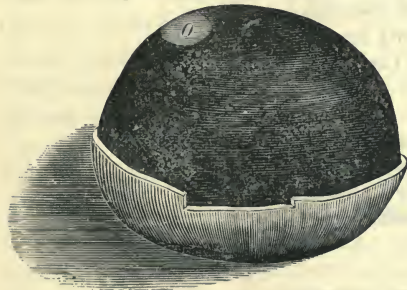


FIG. 3.

where it enters the choroid (O Fig. 3). The choroid may be cut around and slipped off like a cap disclosing the retina. The eye should now be placed in a sunbeam that the beautiful pink veins and curious structure of the retina may be clearly seen. Upon removing this last coat of the eye, the most wonderful sight of all is disclosed. Through the vitreous humor is seen the crystal-

line lens surrounded by the radiating folds of the crape-like ciliary process. After all have in turn, a few at a time, viewed this in a beam of sunlight, remove the vitreous humor sac, and, placing it on a plate with the adhering lens up, pass it around the class. Finally, separate the lens from the vitreous humor and, by placing it on a printed card, show its magnifying power (Fig. 4.)

No one can fail to be deeply interested in studying the eye in this way. No one can learn much about eyes in any other way.

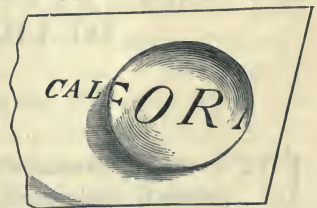


FIG. 4.

The first principle of human culture, the foundation-stone of all but false, imaginary culture, is, that men must, before every other thing, be trained to do somewhat.—*Carlyle*.

HYMN FOR THE PACIFIC STATES. L. M.

 BY PROF. J. H. ROGERS.

I.

IN choral hymn our hearts ascend,
 O God, to bless thy holy name ;
 Let ours with angel voices blend ;
 While glory, all thy works proclaim.

II.

The beauteous vale, grand, cloud-capt mount,
 Rich garniture of earth and skies,
 And deeds of grace beyond recount,
 Bid grateful, sacred incense rise.

III.

Erst us afar, from parent land
 Thou hither led'st our dangerous way ;
 Yea, thine almighty, shielding hand
 Was fire by night, and cloud by day.

IV.

The heathen hence didst thou expel ;
 Thus room for thine own vine prepare :
 Here, firm in faith, may Israel dwell ;
 Thy lasting favor, Lord, to share.

V.

Deep, broad foundations, help us lay ;
 The social superstructure raise ;
 Of light and love a full display ;
 A monument of ceaseless praise.

 DID THE "LOUISIANA PURCHASE" EXTEND
 TO THE PACIFIC OCEAN?

 BY JOHN J. ANDERSON, PH. D.

UP to the appearance of the United States Census Report of 1870, it was generally understood and believed that the territory acquired from France in 1803, commonly known as the "Louisiana Purchase," extended no further west than the Rocky Mountains. Every author of note, so far as is within the writer's knowledge, who expressed any opinion on the subject, so declared ; but since the advent of that report, containing a map as it does in

which the "Purchase" is made to extend to the Pacific, several compilers of school histories, adopting the verdict of the map, have asserted that the "Purchase" extended to the Pacific; and this assertion is now found in their books, and is consequently taught as a truth. One author, while adhering to his former statement, that, "What is now the State of Louisiana was but a little part of the vast territory which bore then that name, for this territory extended from the Mississippi to the Rocky Mountains," has inserted in his book an exact copy of the census map referred to, without correcting the second error of the map, which asserts that Texas was ceded to the United States by Mexico in 1848. Need he be told that Texas was "annexed" to the Union in 1845, and was immediately after represented in our National Congress? It is thus seen that while some instructors are teaching that the western limits of the "Louisiana Purchase" did not extend beyond the Rocky Mountains, others are teaching that the limits did not stop short of the Pacific Coast. Whom are we to believe? Both sides cannot be correct. Let us look into the facts.

In the year 1682, the French explorer La Salle descended the Mississippi river to its mouth, taking possession of the country in the name of his king, Louis XIV. In this region the French planted settlements, established missionary stations, and built military posts. Already we come to the important question upon which hinges the solution of the whole matter. What was the extent of the territory not merely occupied but claimed by the French? Parkman, in his "Discovery of the Great West," a work evincing extensive and patient research, says (p. 284): "The Louisiana of to-day is but a single State of the American Republic. The Louisiana of La Salle stretched from the Alleghanies to the Rocky Mountains, from the Rio Grande and the Gulf to the farthest springs of the Missouri." Greenhow, in his "History of Oregon and California" (p. 283), makes a like declaration, and so do all other writers who have given special investigation to the subject.

The French remained in possession of Louisiana till 1762. In November of that year, preliminaries of peace were agreed to at Paris, between France and Spain on the one side, and England and Portugal on the other, and, by the treaties directly afterward made, France ceded to Spain "all the country known under the name of Louisiana, as also New Orleans and the island on which that city is situated," and Great Britain, a little more than two months later, "received possession of Canada, Florida, and the portion of Louisiana east of the line drawn along the middle of the Iberville river to the sea." Spain thus came in quiet possession of all the region of Louisiana west of the Mississippi and the Iberville. (The Iberville is an outlet of the Mississippi, about fourteen miles south of Baton Rouge). The fact that arrests our attention at this stage of the investigation is that while the treaties made at Paris gave Louisiana a definite boundary on the east, nothing was said of a western boundary. Why was this omission? Greenhow (p. 279), offers an explanation in these words: "With regard to the western limits of Louisiana, no settlement of boundaries was necessary, as the territory thus acquired by Spain would join other territory of which she also claimed possession." The western part of Louisiana it will be noted, joined *other* territory: it did not extend to the Pacific.

During the next thirty-eight years Spain was in possession of Louisiana. In the year 1800, an exchange of territories was effected, Spain, in order to enlarge the dominions of one of her royal princes, transferring to France the province of Louisiana in exchange for certain lands in Italy. The language of the transfer is an important factor in this investigation. "His Catholic majesty," so says the transfer, "engages to retrocede to the French Republic, the province of Louisiana, with the same extent which it now has in the hands of Spain, and which it had when France possessed it, and such as it should be, according to the treaties subsequently made between Spain and other states." Was language ever more explicit? This, certainly, does not look like giving to Louisiana the Pacific Ocean for its western boundary.

We now come to the acquisition of Louisiana by the United States. This was accomplished, as we all know, during Jefferson's administration. It is a matter of history that Jefferson had no purpose of receiving more territory than the island on which New Orleans is situated, and the region commonly known as the Floridas. Randall, in his "Life of Jefferson," expresses the opinion that the president desired to procure the whole territory of Louisiana, but there is not the slightest evidence of this in all the official correspondence of the time. Be that as it may, Napoleon's proposition to sell the whole province, produced a great surprise to the American negotiators in Paris. The purchase was effected on the 30th of April, 1803. Now, the vital question just here is, what did we buy? How large was the purchase? The treaty, or, as we may call it, the bill of sale, itself, will best answer the question. After reciting the third article of the treaty of 1800, the territory thus retroceded to France was, says the bill of sale, "ceded to the United States, in the name of the French Republic, as fully and in the same manner as it had been acquired by the French Republic, in virtue of the above-mentioned treaty with his Catholic majesty." This, and nothing more. "No other description of boundaries," says Greenhow, "could ever be obtained from the French government." In our negotiations with Spain, commenced at Madrid in 1804, for the adjustment of the lines which were to separate the territories of the two governments, Spain contended "that the Louisiana ceded to Spain by France in 1762, and retroceded to France in 1800, and transferred by the latter power to the United States in 1803, could not, in justice, be considered as comprising more than New Orleans, with the tract in its vicinity east of the Mississippi, and the country immediately bordering on the west bank of that river" (Greenhow, p. 280); and in 1818, up to the close of the long-pending negotiations, now conducted at Washington, Don Onis, the Spanish Minister, firmly reiterated this declaration (Hildreth, Vol. VI., p. 647). On the 12th of March, 1844, Mr. A. V. Brown, from the "Committee on the Territories," made a report in Congress, covering twenty-four closely printed pages, in which this whole question is thoroughly discussed. In all this long report there is not the first attempt to prove that our right to Oregon came to us through the Louisiana Purchase. Witness the language of the report: "The Louisiana treaty cedes to the United States, the province of Louisiana, with the same extent it had in the hands of Spain in 1800, and that it had when previously

possessed by France." This description is loose, but Napoleon chose to execute a quit claim rather than a warranty of boundaries. But why did Napoleon so choose? Why did he not give us a deed of the territory to the Pacific? For the best of all reasons. He did not own, nor had he ever owned that extent of territory. He sold us just what he had—nothing more. He wanted the money, for just at that moment he was going to war with England; and we, when the unexpected opportunity came, discovered that we wanted the land he could sell—every inch of it.

In support of the conclusion we have reached, there is abundant testimony, the most of it in the shape of official documents. The correspondence, with accompanying documents consisting of instructions and reports, commencing in the early part of 1823, between John Quincy Adams, Secretary of State, and Richard Rush, Envoy Extraordinary to Great Britain, gives us the first full view of the whole subject. "All the rights of Spain to the western territory north of the forty-second degree of latitude," says Mr. Adams, "were acquired by our treaty with Spain in 1819." The right of the United States," continues Mr. Adams, "to the Columbia River and to the interior territory washed by its waters, rests (1) upon its discovery from the sea, and nomination by a citizen of the United States; (2) upon its exploration to the sea by Captains Lewis and Clark; (3) upon the settlement of Astoria, made under the protection of the United States; and (4) upon the subsequent acquisition of all the rights of Spain." In the long letter of instruction to Mr. Rush, from which we make the foregoing extract, Mr. Adams makes not the slightest allusion to the Louisiana Purchase. Our claim to the Oregon region, in his opinion, rested upon the four titles named. On the 12th of August, 1824, in a long communication covering many pages, Mr. Rush replies to Mr. Adams. In this communication, Mr. Rush, with great clearness, gives an account of the discussions which he had carried on with the representatives of the British government, but not the first intimation, from beginning to end, is made concerning any claim by reason of the Louisiana Purchase.

We next come to the correspondence between Mr. Clay, Secretary of State, and Mr. Gallatin, Envoy to Great Britain. This commenced in the summer of 1826. Mr. Clay says not a word of the Louisiana Purchase; and Mr. Gallatin, in his able and exhaustive discussion on the subject, as manifested in his letters, and in his celebrated pamphlet of seventy-five pages, published in 1846, makes but the briefest allusion to the Louisiana Purchase. The whole bent of his argument is to show that our title to Oregon came to us through discoveries, exploration, and occupation. Mr. Cushing's report, made to Congress in January, 1839; the books written from the English standpoint, by the English authors, Thomas Falconer, Tavers Twiss, and John Dunn, besides numerous pamphlets, an able article in the *North-American Review* for 1845 (p. 214), as well as presidents' messages, and reports of debates in Congress,—all reviewing and discussing the Oregon Question—have been read by me with care; but nowhere have I seen any attempt whatever to prove that any part of the region west of the Rocky Mountains ever belonged to

France, or that France ever made any pretense of conveying it to the United States. The region was no part of the Louisiana Purchase.

I have alluded more than once to the book prepared by Mr. Greenhow, and from it cited passages in support of my statements. Who was Mr. Greenhow? He was for a number of years the "Librarian to the Department of State," Washington, and was employed by the department to translate the Spanish and French documents relating to the history of Louisiana and Oregon, to make researches and report respecting the Spanish, French, English, Russian and American discoveries and explorations of and in the west and northwest territory of North America; and the result of his labors, a book of 492 pages, was published in 1840, by direction of the United States Senate. It was the authority upon which Mr. Buchanan, Secretary of State, based his arguments in his negotiations with Mr. Pakenham, the British Envoy, which terminated in the treaty framed by those gentlemen, and which was adopted in 1846. Mr. Greenhow's book may, therefore, be regarded as the highest authority. His conclusion with reference to our claim to the Oregon regions as based upon the Louisiana Purchase, is summed up in these words (p. 283): "How far Louisiana extended westward when it was ceded by France to Spain, there are no means of determining. The question has never been touched in treaties, or even in negotiations, so far as is known. In the absence of more direct light on the subject from history, we are forced to regard the boundaries indicated by nature—namely, the highlands separating the waters of the Mississippi from those flowing into the Pacific or the California Gulf—as the true western boundaries of the Louisiana ceded by France to Spain in 1762, and retroceded to France in 1800, and transferred to the United States by France in 1803."

OUR WALK TO THE GOLDEN GATE.

BY GEORGE GOSSMAN.

SUNDAY, JAN. —, 1879, at Lone Mountain.

AS we look on the silent sea,
 From the hills of the homeless West;
 We wonder where *our* graves may be,
 And *where* the havens of our rest.

Will they be on the drifted hills
 In the sands of a sea-lashed shore?
 And what the joys, and what the ills
 That we must often taste before!

Let ships sail on o'er the sunlit wave
 To lands that lie so far beyond,
 Whilst we think back of child and grave
 Of which e'en sadness makes us fond.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[San Diego County.]

CHAPTER VIII.—COOKING, COMPOSITIONS, ETC.

THERE are those who teach school and those who merely keep school. So there are an abundance of house-keepers who are far removed from home-makers. As the school-masters mix up an indefinite portion of the three R's with a slight seasoning, it may be, of other studies, and call the compound "instruction" and "mental discipline," so do house-keepers throw together by *guess* a little flour, yeast, potatoes and water; put this compound into an oven which they *think* is hot enough, bake it until they *suppose* it to be done, eat it hot from the oven, and humorously speak of it as the staff of life. Blessed is the mother who can make good bread, for of her family come the workers of the land. As good reading is to the pupil, so is good bread-making to the house-wife, the key and corner-stone of the rest. No "pies-an'-cakes" to disturb the digestion of that happy family. No fat-soaked beefsteak and leaden potatoes to make horrid their dreams; but well-cooked meat and palatable vegetables make their stomachs healthy, and their brains clear.

Teachers do not pay sufficient attention to the home food of their pupils. It is neither possible nor desirable that a child who is fed on poor, badly-cooked food, should learn as well as if he were better fed. One cannot use the brain without withdrawing nourishment from the rest of the body; and if the supply be not sufficient for all the body, the brain cannot receive enough nourishment for good work.

John Dean had long been pained by the sight of the indigestible lunches which many of his pupils brought to school, and he desired to remedy the evil if he could find a way. Writing compositions was an every day exercise at Wild-cat school, and was counted as a pleasure—a recreation instead of a task. Children love to tell what they have learned, and writing compositions gives them a way to do this. Of course, if a teacher starts in by saying, "Children, I want you to write a composition on 'The Incompatibility of the Co-existence of Free Institutions and a State of Servitude,' and have it done to-day" there will be groaning of spirit and rebellion of soul. But on the first afternoon of school, John Dean said to the children, "I think we are all getting a little tired, so take out your slates and pencils and write the names of ten things which you can see in this room. Write them neatly one under the other, and spell them correctly. Let us see if we can't get the whole ten written in five minutes." When the five minutes had expired, John looked at the lists of words, re-wrote correctly those which were mis-spelled, and asked the child to copy the words several times as he had written them, while he looked over the other slates; showed others a fault in joining such letters as *b* or *o* to the next letter following; praised some who had numbered their lists, and in less than fifteen min-

utes, had improved their spelling and their writing, and they had taken the first step in writing compositions.

The pupils had a short daily exercise during the first month in writing the names of animals, trees, parts of the body, farming and house-keeping utensils, etc., varying the exercise after the first two weeks by putting a descriptive word before the noun, making such lists as: a red cow, an old horse; and then a further step was taken. Each pupil was asked to tell something about a dog. John repeated what the pupil said, occasionally varying the sentence a little to make it better, and asked the pupils to write that upon their slates, beginning the first word with a capital, and putting a period after the last word. After several exercises of this kind, the pupils were asked to write four sentences about a bird, then to tell five things about a cow; and as they went on to less familiar objects, John would tell, or read a number of little short anecdotes or descriptions of the animal or thing they were to write about. The children were then divided into two classes, and the smaller pupils were given work which accorded with their reading and other lessons, while the larger pupils tried more ambitious writing.

Readings were given of history, biography, travels, and science, which the pupils were asked to reproduce upon paper. Instruction in punctuation was given also, and pupils were encouraged to add remarks of their own upon what they had heard read. Once a week their inventive powers were tried with a half-read story, which they were desired to complete as they thought best; until a mere suggestion like this: "A farmer once neglected to fix a weak place in his harness, and I want you to tell me what troubles and losses he had on account of it," would bring out many ingenious and entertaining accounts of the resulting disasters.

"If it did n't take so long to write it," said Mark Peters, one day, "I wish we could each write a long story something like what we read in the papers; just make it all up ourselves, you know."

"Would n't that be just splendid," said Ellen Weeks. "Do let us try, Mr. Dean."

"Maybe you could write a story on a co-operative plan," suggested John. "You, Miss Ellen, might begin a story about the wanderings and trials of a homeless cat, and after writing a dozen lines or so, give the paper to another one of the girls, and so on, letting the last one who receives it finish the story. Mark could describe the adventures of a homeless dog, and the other boys add to the story in the same way."

"And then we would see," said Thomas Jefferson, "whether the boys or the girls could write the better story."

"I suppose *you* do n't feel much doubt as to whom that honor will come," said Alpha Black. "But I believe our cat will make your dog run to his masters for protection."

"When our dog barks, your cat will climb the first tree it comes to," said Thomas, and then the school divided into two eager caucuses to plan their stories. The stories were written and read. The cat had several adventures, and one

well-fought battle with a savage dog whose eyes it almost scratched out, but at last it found a delightful home with a rich old bachelor, where it had plenty to eat, and no dogs to bother it, nor babies to pull its tail. The dog did not fare so well, for Stephen Bennet caused him to come to an untimely end from eating poisoned meat put out for the coyotes, and the last boy did not know what to write until John suggested that he might describe the funeral, when he made such a flood as not only washed the dog's body far out to sea, but carried out the house containing the man who put out the poison,—an act of retributive justice about on a par with those we often hear older people wish for, and indeed a lake of water is preferable to one of brimstone to the imagination.

During the third month of school, the thought came into John Dean's mind that he might use the composition exercise as a means of correcting the diet of some of the pupils. So every Friday afternoon he told them the theory of cooking some plain everyday dish, illustrating his method by means of a small oil-stove which he had purchased some time before. His first lesson was on proper and improper ways of cooking eggs, and he condemned in unsparing terms, the greasy, leathery results of cooking in warm lard, which plan was much in vogue in Wild-cat district. The parents laughed at the teacher's new hobby, indulgently tasted the results of their childrens' cooking, and ended by thinking there might be something in cooking by rule after all, if a person was n't a natural-born cook. The people did not take kindly to raised bread, as they called it in Wild-cat, but preferred the soda biscuit, bitter with alum baking-powder, or redolent with brown spots of salaratus, and it took quite a little outside teaching of hygiene and chemistry to move the minds of the older people to acknowledge that raised bread might be healthier and cheaper than their biscuits, and "cold biscuits aint worth shucks, that's a fact and it's a pity to have them thrown to the dogs," said McCord. It may be mentioned that Wild-cat district delighted in dogs. Every farmer who was at all well off, kept at least one dog. If he was n't quite so well off he kept two. If very poor, three dogs was the mininum number considered to be a necessity. "We feel the need of a revival in business," said the judge to John, one day. "I have three mouths to provide for, and so I feel this depression more than you who have but one."

"You have six mouths to provide for," said John, "Do n't you think each of your three dogs eats as much as a boy would?"

There were two dogs less in Wildcat the next day.

The first of December found John Dean settled in his new house. He had collected quite a large number of books, pictures, and various curiosities, during wanderings about the State; and for the past three months he had bought some furniture, here and there, whenever he had seen something which pleased his fancy at the furniture stores or auction rooms. He had also purchased a great abundance of knives and forks, spoons and dishes, "So if I do not want to wash dishes but once a day, I can have plenty of clean ones on hand," he had said. He asked all the people of Wildcat to take supper with him on the fifth of December, and you may be sure they were all on hand to see for themselves, the various things of which their children had told them.

John Dean now took a new place in their regard. He was a neighbor who could visit and be visited ; who had a common interest with themselves, who in a certain sense belonged to them. Now we all know how much added value anything gains when we own it. Our land is so apt to be better than it was before we bought it, our cattle are better than our neighbors', and our children, resembling us as they do, are incomparably handsomer, smarter, and better in every way than ever children were before. So our teacher, who lives in Wildcat, became a much better teacher than he was before he became a permanent settler there. The supper and party was a great success. The older folks looked over John's pictures, wondered if he had really read all the books they saw, or whether he might have bought them for some unknown purpose, and all agreed that he now lacked but one thing more—a wife. "It is not good for man to live alone," said the Elder, "amid all the delights of Eden, Adam needed a mate." And the Elder glanced approvingly toward his third wife who was seated near him. "I am inclined to believe" said John, "that if Adam could have foreseen all the troubles incident to his marriage, he would have remained single. You remember that Adam was very young when he married. How old was he at the time of his marriage, Elder?"

"I suppose it was owing to the youth and inexperience of the parents that their eldest son turned out so badly," said Mr. White. "Or was it from the lack of good schools in those days, Mr. Dean?"

"You cannot deny that Adam must have led a tolerably pleasant life, or he wouldn't have lived over nine hundred years," said Mr. Silver. "I think it is the duty of all school-teachers to get married if they can find the right one," and his eyes wandered involuntarily to another part of the room where Miss Bell was sitting, and no doubt thought it would be easy for him to find the one.

"Do you think school teachers should marry, Miss Bell?" inquired John somewhat mischievously, but with an involuntary quickening of his own pulses.

"That depends on who asks them," returned Miss Bell, quickly.

"There you have it, Mr. Dean." That's a fair challenge," said Dr. Peters, jokingly ; but John only laughed, and sitting down to the organ he sang Longfellow's "There is a Maiden Fair to See," with such dramatic effect that several of the older ladies remarked when they were on their way home, that they "should n't wonder if that young man had been badly treated by some girl or other before he came here."

THE POWER OF KINDNESS.

BY M. D. GAGE.

[Camptonville, Yuba County.]

ON a cold winter day, half a century ago, a poor and friendless boy of fifteen years, was seen wending his way toward a country school-house, in one of the Eastern States. It was the first day of school. A new teacher had

been employed for the winter term, and, judged by his predecessors, he was an especial object of awe to certain rude boys, who had long been accustomed to the restraint of severity, and who had no reason to anticipate any change of method in the matter of discipline, on the part of the new school-master.

Foremost among the boys thus controlled, or more properly awed into subjection, was William C. Kenyon, who was born in poverty, and, being left fatherless at an early age, was bound to service during his minority, his foster-father being a farmer of small means and great selfishness. The usual conditions of the agreement were stipulated in this case, viz : board, clothing, and tuition in the district school for the winter term of three months in each year. The boy was thus deprived of those elevating home influences to which our youth owe their early moral tendencies. The conditions of service were observed by Mr. Small with the most careful regard to the least possible expense, and a total absence of all sincere interest in William's welfare.

It therefore fell to the poor boy's lot, as a continuation of constant harshness in his unhappy home, to enter school, at the commencement of each succeeding winter term, with the mark of Cain on his brow; Mr. Small taking special pains to inform every new teacher, in advance, of the extreme viciousness of the child. In process of time, the continued accusation of wrongdoing at home, followed by severe and frequent punishment, produced its legitimate result. And when his teachers, under the influence of studied misrepresentation, one after another subjected him to constant suspicion, attended with harsh treatment, it is not surprising that his reputation as a thoroughly vicious boy was fully established. Indeed, not only at home and in school, but throughout the community, and as far as he was known at all, William had the unenviable notoriety of being the worst boy to be found. At the time of his appearance in school, on the morning in question, he was himself convinced of his title to a bad reputation; for, having the frailties of our poor humanity, the soil, which might have produced good fruit, brought forth, after its kind, that which had been sown without stint. That he was bad at heart and consciously depraved, the sequel will disprove; but to external observation, and never for a moment penetrating the mystery of his soul, he himself felt he was entitled to his dishonorable reputation. This was his own admission, as the writer heard it from his lips, long years after the scene here described. It was his oft-repeated declaration, that during all those years of miserable home and school life, no word of affectionate interest ever fell upon his ears from his foster-parents or his numerous teachers.

Many readers of the JOURNAL can have little or no personal knowledge of the great confusion which prevailed in those early times, in reference to uniformity of text-books. The only limit to utter absence of system was found in the small number of compilations then used in the schools. There were no series of books, such as are now published, and little attempt at classification. Blackboards were unknown, and class recitations little practiced. Each pupil brought such books as convenience or taste prompted, and out of this collection the teacher was expected to bring order and efficiency. And it is high

praise of both teachers and pupils which affirms a degree of thoroughness on the part of diligent students, which would compare favorably with the best proficiency attained under our present excellent school system.

But the inspiration which was essential to successful study was unknown to William, familiarly known as Bill Kenyon, as he took his accustomed place in the school-room on that dreaded first day of school. For though anticipating the invariable result of his foster-father's usual positive assurance, conveyed to the new teacher, that William was a very bad boy, and must be kept in subjection by severe measures, there yet lay hidden in that young heart, awaiting the magical touch of human affection, a tenderness of sensibility that none had ever discovered or even sought to find. That unawakened nature shrank from each renewed act of injustice, but more especially from the harsh tones of severity, prompted by a pre-judgment of his character by the new teacher.

When, therefore, all were seated, awaiting the opening address of the teacher and his personal examination of their proficiencies, none could know the feelings which contended for mastery in William's bosom, as he anticipated the usual harsh voice of authority demanding of him, as former teachers had done, some exhibition of his standing, which, being extremely unsatisfactory for a boy of his age, was at once considered a sufficient confirmation of his bad reputation. As if by a secret purpose to prolong his suffering, by anticipation of approaching severity, Mr. Jameson deferred his inquiries till all the larger pupils had passed a brief examination. Then approaching William Kenyon's seat, while all eyes were fixed upon him, he gently laid his hand on the poor boy's head, with all the tenderness of the most affectionate father, in the act of blessing his beloved son, at the same time speaking in a tone of unaffected sympathy for the more than orphan child of misfortune, only saying, "Well, my son, are you ready to do your best in school this winter?"

Had a blow fallen on the poor boy's unprotected head, or a harsh word upon his ear, accustomed as he was to long continued cruelty, his power of resistance would have met the shock with apparent indifference. But these first words of kindness, and the first touch of human sympathy from a manly soul, stirred his being to its depths, and he bowed his head upon the desk before him, too full of gratitude for a reply, a great throb of noble resolve at the same time vibrating every fiber of his intellectual and moral nature. The scene was one on which angels gazed with admiration, and God himself looked down with approbation, as a practical embodiment of Christ's own spirit, which communicated its mysterious power to the Syro-Phœnician woman, at the touch of her faith in his sympathetic nature. Every pupil was awed by the solemn stillness which succeeded the scene, and which was as unexpected and impressive as it was profitable. The ascendancy of the teacher over his school was assured, and the work accomplished during the term proved the wisdom of his choice in the use of means.

In keeping with his nature, Mr. Small had stinted William's supply of means for obtaining knowledge, upon the plea of the boy's vicious and idle habits, and he was found to be in need of the necessary text-books for pursuing

his studies. The first day of school furnished abundant proof of the great change wrought in a boy who had so long borne a bad reputation. Mr. Jameson needed no further proof of sincerity than he that day witnessed, and all his pupils saw and felt that a new and powerful inspiration had been communicated to him, and through him to all susceptible of its influence. But Mr. Small heard the request of William for the needed books with undisguised displeasure, and refused to perform his duty in the matter. Even Mr. Jameson's request, made in William's behalf, proved ineffective; and as it became evident that a noble desire and lofty purpose on the boy's part, found no kindly response in the hard heart of the cruel foster-father, no further effort was made to gain his co-operation in reforming a boy whose evil reputation had been the direct result of his own injustice. Mr. Jameson therefore provided, out of his scanty means, the books which William needed, and found an abundant reward in the progress of his pupil, who soon distanced all competition; and, notwithstanding the inspiring influence of his example on those who were far in advance of him at the commencement of the term, the boy who came into school with a ruined reputation, as a foundation on which to build his hopes, and with various fragments of text-books, as appliances for erecting his future character, at the close of a single term stood the acknowledged superior of the entire school, in point of deportment and scholarship, carrying with him the love of his teacher and schoolmates, and, above all, a proud consciousness of capacity for future usefulness in life.

The subsequent career of William C. Kenyon forms an important chapter in the educational history of Western New York, where he built his edifice of a noble character, on the foundation laid by the hand of kindness in that obscure country school-house. On leaving school at the close of Mr. Jameson's term, William formed a fixed resolution to obtain an education which would qualify him for his great life-work. He accordingly entered into an agreement with Mr. Small for the purchase of his time during minority, and at once began to devise means for accomplishing his object. He served an apprenticeship as a machinist, and having gained a knowledge of his trade, pursued it with diligence, at the same time prosecuting his studies. In due time he entered Union College, at Schenectady, under Dr. Nott, and at the close of his course graduated with the honors of his class, and equipped for his chosen profession of teaching.

He had meantime become an earnest and devoted Christian, embracing the views of the Sabbatarians, who observe the seventh day as the divinely instituted Sabbath. Soon after graduation he established a small school at Alfred, Allegany Co., N. Y., in the midst of a flourishing community of Sabbatarians. The school flourished, the patronage rapidly increasing, until it commanded the confidence and support of a large region in Western New York. At first assuming the character of an academical school, it gradually enlarged its accommodations and influence, till it became a chartered collegiate institution.

Prof. Kenyon became president of the college, which continued to wield an extensive influence, and still flourishes, having sent out from its walls, large

numbers of those who have wielded a powerful influence for good. Several similar institutions were established at other points, as the public demands required, by graduates from this school, among whom are some of the most prominent educators in the Empire State.

President Kenyon was eminent for his success as a teacher, his goodness as a man, his piety as a Christian, and his advanced views as a patriotic citizen. All that he was, and all that he accomplished, he through life attributed to the one inspiring act of kindness and the words of love received from the true teacher, whose memory was always cherished with deepest gratitude. He died many years since, leaving a valuable legacy of social, moral, and religious influence, which is still exerting its power through the channels of educational activity. The life of a man thus inspired to rise above the difficulties of his lot, becoming a source of inspiration to others, and setting in operation a series of powerful agencies for good, possesses the deepest significance for all who are oppressed with a sense of difficulty in the path of progress, and especially for teachers who are called to mold thought and character by their influence and example.

THE BEGINNINGS OF PLANT LIFE.

[From Rattan's Popular California Flora.]

IF the first rain of the wet season is followed by warm, sunny weather, specks of green will soon appear among the dry stems of last year's weeds; and in fence corners, or other eddy nooks where summer winds have drifted seeds and covered them with dust, you may find perfect mats of baby plants. With a shovel skim off a few inches of this plant-bearing soil, and carefully examine it. Except a few green needles, which you recognize as spears of grass, most of these little plants seem to consist of white stems, which split at the top into pairs of green leaves. Looking sharply, you may find between

1. Seed of Bur-clover just before it appears above ground. 2. Same three days older. 3. Mustard. 4. Bur-clover showing the first and second plumule leaves; the former simple (apparently), the latter with three leaflets. 5. Mallows (*Malva borealis*), showing the long-petioled seed leaves (Cotyledons), and one plumule leaf unfolded. 6. *Filaria* (*Erodium*), with lobed or sub-compound seed leaves.



each pair of leaves a tiny bud; or, in the older plants, this may have grown other leaves, which curiously enough are not like the first two. (Figures 1 to 6). Searching through the shovelful of earth you will likely find plants in all stages of growth, from swollen and sprouting seeds to stems, which are just pushing their leaf-heads into the sunlight. Here, then, is material from which you may

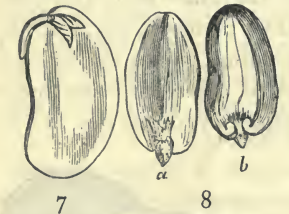
learn how plants grow ; a lesson, remember, which no text-book or school-master can teach you. It will be easier, however, since most of these early wild plants come from very small seeds, to take your first lessons from plants which have the larger beginnings. You should first study—

THE PLANT IN THE SEED.—Get many kinds of large seeds, such as peas, beans, squash-seeds, buckeyes, castor beans, corn, etc. Put them in water that they may become soft enough to be readily separated into their parts. In a day or two, starchy seeds, such as peas or beans, will be in good condition.

First take a bean and make drawings showing the outlines as seen side-wise and edgewise. Any marks that seem to be found on all beans must be put down in the drawing, but do not bother about the shading. These attempts to represent what you see will lead to the discovery of certain marks on the concave edge of the bean, the meaning of which you may sometime learn by studying the growth of the seed in the pod. After you have thus studied the outside of the seed, slit it along the back with a sharp knife and take out the kernel. It readily splits into halves which are held together near one end by a short stem. Upon breaking them apart the stem sticks to one half, and you discover growing from the inner end a pair of tiny embracing-leaves.

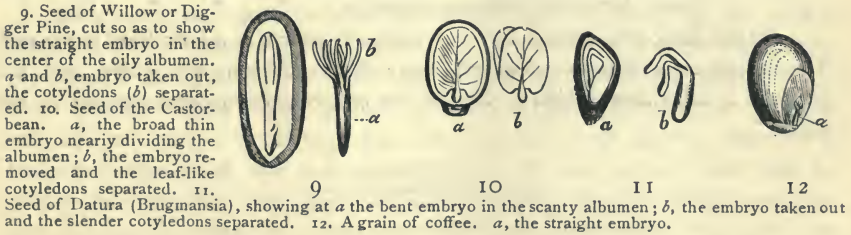
Make another drawing and compare it with Fig. 7. Presently it will be clear to you that this entire kernel is a little plant. The plant in this dry apparently lifeless first stage of its existence is called—

THE EMBRYO, OR GERM.—This, as you have seen, is made up of the stem, or *Radicle* ; the thick parts called *Cotyledons*, and the two-leaved bud, or *Plumule*. The embryo of a pea is similar to that of a bean, but the plumule is more decidedly a bud. * * * * *



7. One cotyledon of a bean with the radicle and large plumule. 8. Embryo of a peanut. *a*, inner side of one cotyledon with the radicle and plumule; *b*, outer side of the same.

ALBUMINOUS SEEDS.—Remove the shell-like coat of a castor bean, and carefully split it flatwise. What at first seems to be a large plumule proves to be free from the rest of the kernel, and with care you may be able to get it out



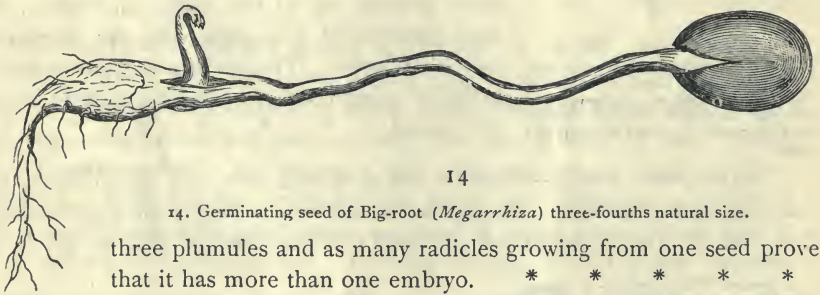
9. Seed of Willow or Digger Pine, cut so as to show the straight embryo in the center of the oily albumen. *a* and *b*, embryo taken out, the cotyledons (*b*) separated. 10. Seed of the Castor-bean. *a*, the broad thin embryo nearly dividing the albumen; *b*, the embryo removed and the leaf-like cotyledons separated. 11. Seed of *Datura* (*Brugmansia*), showing at *a* the bent embryo in the scanty albumen; *b*, the embryo taken out and the slender cotyledons separated. 12. A grain of coffee. *a*, the straight embryo.

whole (Fig. 10). It is a straight embryo with beautifully veined, leaf-like cotyledons, embedded in a white, oily substance, which makes up the mass of the kernel. This substance is called *Albumen*, a name which applies to anything inclosed with the embryo by the seed coats. Peas, beans, acorns, nuts, and most large seeds have no albumen. Carefully cut thin slices from a well soaked

coffee grain until its embryo appears as represented in Fig. 12. The horny, folded albumen makes up most of the seed. * * * * *

THE GERMINATION OF SEEDS—Plant the remainder of your seeds—those of a kind together—in boxes or pots of sand, or any kind of loose soil you can get. Keep this little experimental garden in a warm place, where it can get a bit of sunshine, and water it daily. At intervals of three or four days dig up one of each kind of seed, and, after careful examination, make drawings to illustrate the successive stages of growth. It is of the greatest importance that you repeatedly attempt to draw what you see; it is not of the greatest importance that your drawings should be pretty.

You will learn, among many interesting facts, that most seeds are pushed up to the surface of the ground by the growth of the radicle. There the seed-coats drop off (except that in seeds without albumen the cotyledons are apt to slip out of their coats on the way up); the cotyledons spread apart, become longer and broader, and turn green; lastly, the plumule becomes a leafy stem. Meanwhile, roots grow from the lower end of the radicle. Some cotyledons, like those of the pea, do not appear above ground, but send the plumule up. The seeds of Big-root—a pest which grows in nearly every field—behave in a remarkable manner. If the seeds are lightly covered, the united stems (petioles) of the cotyledons, by their growth, push the radicle and plumule directly downward four or five inches into the soil, then the plumule comes up, and the radicle begins to grow a “big root.” If deeply planted, the seeds may grow as represented in Fig. 14. Orange seeds may have puzzled you, but now two or



14

14. Germinating seed of Big-root (*Megarrhiza*) three-fourths natural size.

three plumules and as many radicles growing from one seed prove that it has more than one embryo. * * * * *

By this time you cannot fail to see that *the embryo is a little plant in the seed*. The radicle answers to the *stem and roots*; the cotyledons are *leaves*, and the plumule is a *bud* from which is to grow the entire above-ground portion of the plant.

Montaigne says: “To know by heart, is not to know.” Self-development should be encouraged to its fullest extent. The pupil should be *told as little as possible*, and induced to *discover as much as possible*. Encourage him to conquer difficulties himself.—George W. Minns.

PRIMARY READING—WORD AND PHONIC METHODS.

BY O. S. INGHAM.

[City Superintendent Alameda Schools.]

WITH the very short notice given to me to prepare an article on Primary Reading as based on the Word and Phonic Method, I comply the more willingly since I am fully convinced that, although much has already been well said in the JOURNAL on that subject, and many, perhaps the majority of primary teachers, are well versed in the theory of these methods, there is still, in practice, in too many instances, a decided falling short of that success which should be attained, and which would attend efforts made in stricter compliance with conditions easily understood but, withal, very exacting.

For, while every primary teacher in the State knows, doubtless, that the Word and Phonic methods are founded on a knowledge of child-nature, and a practical application of that knowledge—the child's keen perceptions, insatiate curiosity, restless activity, ready impressibility, retentive memory, and instinctive inclination to imitate—too many ignore the important fact that the intensity of interest and feeling on the part of the child is almost momentary in duration. Once knowing and acting on the knowledge, that the thought or impression to be conveyed in order to be vivid and lasting, must be presented when the interest of the child is at the maximum, the teacher holds the "open sesame," to all the mental and moral possibilities and potencies of childhood's realm.

Each exercise, then, in primary reading, should be brief and interesting; that teacher is exceptionally good who can profitably employ more than five minutes with beginners. from the time the exercise really commences, till the children are sent to their seats, to copy the work from the blackboard upon their slates. During that five minutes, the teacher should earnestly, enthusiastically labor to keep the interest unabated and *strike while the iron is hot*.

Before entering upon the practical consideration of the Word and Phonic Methods, I wish to say that, in referring to Appleton's First Reader, I emphatically disavow in advance any, the least, intention to ignore the merits of the First Reader of any other series. I refer to the Appleton for the sole and sufficient reason that it embodies the methods of its author, Mrs. A. J. Rickoff of Cleveland, who is acknowledged to be now, as she has been for twenty years past, the best, most successful primary teacher living; and, further, because the methods therein presented agree substantially with those that I have, for several years, labored to make efficient in primary classes under my supervision.

To save time, if nothing else, the primary teacher should have fifty or twenty-five cards or their blocks of wood, an inch wide and two or three inches long, on which in large type, should be printed all the short sim-

ple words presented to the child's attention for the first few weeks of its school life, with a frame specially prepared for the purpose. These words could be arranged for the "word-hunting" exercise, and for constructing short simple sentences; without these, the teacher should make free use of the blackboard. Upon it, before the commencement of the first exercise, the teacher should neatly and accurately print in large letters, a list of words like the following:

man,	far,	cat,	she,	dog,
boy,	cat,	rat,	this,	cart,
red,	cow,	girl,	fat,	pig,
for,	ran,	cat,	big,	cat,
see,	cat,	his,	my,	you.

This done, the teacher, with the First Reader in hand unopened, so arranges the class before her that they can see the blackboard, and the words and pictures in the book when opened. A minute or two, not more, should, in the outset, be spent in asking pointed, pertinent questions concerning the *CAT*. "How many of you have seen a *cat*?" "How many of you have a *cat*?" "Sarah, what is the color of your *cat*?" "John, what is the name of your *cat*?" "How many eyes has a *cat*?" "How many feet?" etc. Open the book at page 4, and show them the picture of the *cat*. Question them about the picture. All this time, the teacher should be earnest, enthusiastic, skillfully asking questions as rapidly as circumstances will permit, then at the right juncture, while the interest is unflagging, ask them how many of them would like to see the *word* that stands for *cat*. All hands will be instantly raised. Promptly show them the word *CAT* on the next page. Every eye, ear, and mouth will be opened to take in the wonderful word. After the class have looked at the word till its general form is well fixed in the memory, direct their attention to the blackboard, and placing the pointer in the hand of one of the number, ask him to point out the word *cat* in the printed list thereon. The pupil will do it promptly and correctly if the exercise thus far has been properly conducted. The different members of the class are called upon to point out the word *cat* till all on the blackboard are found. The teacher then slowly and neatly prints the word *cat* by itself, on another part of the blackboard, for the children to copy on their slates at their seats.

The word *rat* can be next presented and treated in a similar manner. Next, *black* can be introduced, the teacher, of course, varying the questions to suit the occasion. The particles *an*, *the*, *my*, etc., can be associated with the words *cat*, *rat*, etc., without confusing the child as his mind has mastered the meaning and his memory retains the form of the words *cat* and *rat*, without explanation, these particles can be placed before the child, not alone, but associated with the word limited.

It is doubtless apparent to every one that the mind of the child, at first, grasps the form of the printed word as an *entirety*, not taking in the minute details of letter-forms. The ear hears the pronounced word as a whole, not carefully distinguishing the separate elementary sounds that unite to form the

word. After the child has learned and copied several words, he begins to perceive the distinctive differences in the forms of the words and also that these differences in *form* are associated with differences in *sound*. At this point, the Phonic Method should be introduced. Print on the blackboard and pronounce in the usual manner the word *rat*. Point to it three or four times, separating the letters still farther and pronouncing the elements still more slowly and distinctly, thus :

rat
 r—a—t
 r——a——t
 r————a————t

By such analysis of the elements of the word, the child is led to understand that words are made up of separate and varied parts which united properly form a harmonious whole.

The process should then be reversed, thus :

r————a————t
 r——a——t
 r—a—t
 rat

By this synthesis of the elements of the word, the child sees how sounds and letters are united to form words. From twenty to twenty-five of the words first learned, should be thus analyzed and synthesized. The teacher need not fear that the youngest child even in the class, will fail to imitate perfectly the phonic elements as she gives them.

From the outset the teacher can not be too vigilant in guarding the child against the acquisition of bad habits of reading. No drawing, screeching, lazy, listless, unnatural style should be tolerated for a moment. Let every word be pronounced correctly, naturally, as in the ordinary conversational style. Insist on this ; be content with nothing else.

It would seem, then, that to secure the best results, the primary teacher should be wide-awake, even enthusiastic, of great tact, good judgment, versed in child-nature, large-hearted, kindly in word and act, winning instinctively the love and confidence of the child, lady-like in deportment, “unwearied in well-doing,” and devoted, heart, soul, mind and strength to her work.

Primary school work, especially, should not be attempted by the lazy, prosy, indifferent, unsympathetic teacher ; nor should a broken-down, half-demented, antiquated, peevish, old crone be quartered upon a primary department even to save her from the alms-house. Yet this is frequently done as an act of charity by school Boards who think that anybody can properly teach young children. Better, a thousand times better, to donate the salary to such teacher, and close the school-room door against both her and the pupils. Better, infinitely better, that the child go untaught, than to be wrongly taught in the outset, or rather stultified, crippled, perhaps ruined forever as to scholarship.

Does any primary teacher say, "I try my best to interest my children and secure their love and confidence, but I do not succeed?" Your want of success is the best possible evidence that your *forte* is not primary teaching; in mercy to the children, do "step down and out."

In the light of the terrible wrong perpetrated upon the childish generations of the past, the mental ruins that thickly strew the educational pathway, I can fancy myriads of little hands pleadingly extended for protection against mental ruin at the hands of incompetency and stupidity. Shall we not heed this pleading? How greatly the times need more earnest and better qualified primary teachers!

EDITORIAL DEPARTMENT.

QUINCY AND SAN FRANCISCO.

MR. James H. Slade has again favored the California public with an address on the "Quincy System." He spoke from the platform of Platt's Hall, in this city, by the invitation of prominent citizens including several members of the present City Board of Education. Mr. Slade is a fine speaker; his remarks were, consequently, interesting. We are, however, forced to believe that his advice, suggestions, and demonstrations have fallen on barren soil, and will fail to produce any adequate results.

The truth is, the success of the "Quincy System" demands conditions still wanting in this city, and for which our people will not be ripe for years.

In fact, as we are prepared to prove, we already have the Quincy System; only it is like the play of Hamlet with the melancholy Dane left out.

What should be the conditions under which California may render effective and successful the "Quincy System?" Stated briefly, this is what we gather from Mr. Slade's newspaper contributions and speeches since he has been in the State.

An enlightened public sentiment; a press, undemagogic and disposed to give the new system a fair trial—to *let the schools alone*; School Boards composed of intelligent men and women; a radical change in school organization entailing the abolition of yearly or biennial elections of school officers, and their retention in office for many years; a trained superintendency invested with full, even autocratic powers, and responsible only to the Board of Education which should have the sole control of appointment; the entire obliteration of the "rotation in office" theory in the tenure of teachers' positions; the selection of the wisest, most enthusiastic and conscientious, most womanly and motherly natures to teach the youngest children—these, all of these—are conditions essential to the existence of the Quincy "new departure."

It is to the practical enforcement of these principles that the "Quincy System" owes its vitality. And it is because the Massachusetts city has offered the richest soil for the seed contained in these ideas, and because the workers there have not hesitated to sow them broadcast, that this light has come from the East.

What the conditions are in San Francisco.—

The people of San Francisco are not Cossacks, but it would prove about as difficult to introduce a system of university education among the Cossacks of the Don, as, under existing circumstances, to transplant the "Quincy System" to San Francisco, and keep it alive. The appearance of the Platt's Hall platform, the usual tone of our newspaper editorials, the drift of the Sunday evening lectures of our clergy all illustrate our assertion.

On the platform, and among the committee who tendered Mr. Slade an invitation to address them and the people of San Francisco, were several members of the present Board of Education. Their appearance was a forcible reminder of Robert Burns' exclamation—

"Wad some gude power the giftie gie us,
To see oursels as ithers see us."

Was there ever anything more absurd than to talk about introducing the Quincy System to men who have systematically violated every educational principle on which that system is based?

One of its fundamental doctrines is that the best teachers should be placed in the lowest primary grade: the San Francisco Board, by attaching the lowest salary to the lowest grade (though there is still in force a legislative enactment requiring the contrary) have made the most impressible, most plastic minds subject to the experiments of tyros; they have stigmatized experience as valueless; in their management of committees and their disregard for the superintendency, they have ignored the fact that education is a complex science, concerning which teachers or those who have been teachers, are the most competent judges.

Here we must digress for a instant.

Among the usual "molasses to catch flies" phrases of the late political campaign, none struck us as more full of cant than the phrase—"let us have business men to manage our schools. We have had enough doctors—and lawyers and old school-teachers, now give us business men."

Even teachers echoed these catch-words. Shame on their intelligence!

We hope the teachers of the San Francisco schools, and those of our people who love the free school system, are now convinced that the best man to set a broken limb is a surgeon, to carry on a suit at law, an attorney, and to manage our schools, those who have some experimental knowledge of the details of school management.

To return to that part of our subject—newspaper editorials.

It is a fact that no agency has done more to retard educational progress in this city than several of the daily newspapers.*

Their profound ignorance of anything pertaining to educational details, has been equaled only by the alacrity and perfect confidence with which every subject relating to our school system is taken up, oracularly discussed, disposed of in half a column. That any special knowledge of the subject is required, is an idea which has never occurred to them. They firmly believe that any man of culture, no matter how ignorant he might be as an authority in legal matters, in medical practice, in

*To prevent any misunderstanding, we will state that the papers particularly referred to, are the *Morning Call* and *Evening Bulletin*, both of this city.

points of theology—would be thoroughly competent to judge and decide on anything pertaining to education. A more apt illustration of the old distich—

Fools rush in,
Where angels fear to tread,

can not easily be given.

So dense and widespread is this ignorance, that some of the daily newspapers have actually shed inky tears over the mournful fact that our poor California infants are still compelled to learn their A B C's, when in Quincy they learn whole words at once.

The word—the phonic—the sentence method (we do not say this to inform our teachers) have been generally used here for ten years past, and there is not now, one teacher in twenty who teaches by the A B C method.

And so it is with geographical mud-pies, with arithmetic and language teaching by means of objects, and with the dozen other modern methods, of which the average editor has not yet heard the name, even by interviewing Mr. Slade, or reading the pamphlet of Mr. Adams.

A word of parting advice to our brethren of the quill. Guard the school system as much as you please. See that it remains unsectarian, moral, American. Then let it alone, and mind your own business. You know precious little of what should be taught our youth; nothing at all how they should be taught. If you are sincere in desiring an efficient system of American popular education, keep your hands off.

A word now in relation the attitude of the clergy, who are as conspicuous for their absence from our schools during hours of work, as they are for their presence on exhibition platforms on "Commencement Day."

We regret to say it, but our observation proves that the interest of the San Francisco ministry in education (with a very few shining exceptions) is perhaps an abstract liking, certainly not that devotion which springs from an intimate knowledge of the object loved. In the writer's experience of twelve years in the public schools of San Francisco, he has not seen a minister cross the threshold of a school with which he was ever connected, except at "Exhibition Time." He has not heard of a clergyman passing an hour in a class-room, and there examining for himself the system of teaching and the manner of our teachers. The discussion of the "Quincy Method" in the Sunday evening lectures from the pulpit, have very faithfully copied the method used by those blind Hindoos, who attempted a scientific description of an elephant, each by feeling of some one part of his body, and therefrom constructing an ideal whole.

Owing to the mis-instruction of these false teachers, chiefly however of the press, an abnormal feeling pervades this community, of which this Platt's Hall meeting affords an illustration. People went there expecting to hear something new, because it came from abroad. They appeared utterly oblivious that every criticism of Mr. Slade in regard to the matter and manner of our teaching, was, years ago, brought to their attention in the reports of at least two State superintendents, John Swett and Henry N. Bolander; that John Swett, Ezra S. Carr, and A. L. Mann have, at various times, and in official documents, suggested by way of reform and progress, identically what has been done in Quincy. They evidently did not know that these men have devoted their lives to leading in a work of educational reform, which has failed of a full measure of success, only because the people were not, and are not, prepared to follow.

Our teachers are ready for Quincy; it is our press, our clergy, and primarily our people who are not.

As long as the people elect men of little culture, no special fitness, and contracted mental scope to serve as School Directors, they will not get Quincy. As long as there is an entire change in school administration every two years, there will be no Quincy. As long as the superintendent is a figure-head, and not a wise, conscientious, specially-trained, broad-minded educator, there will be no Quincy. As long as female teachers are classed socially and economically a grade below the kitchen-scullion, there will be no Quincy. As long as inexperienced young girls are selected to give the first start to the mental development of our little ones, so long will there be no Quincy. And as long as sixty or eighty children are packed together, to be "taught" by one solitary, unaided energy, so long will there be no Quincy System.

And finally, as long as all retrenchment in public expenditure begins with the school and its teacher—and ends there, so long need the people of San Francisco expect neither the Quincy system nor any other efficiently-carried-out plan of education.

DESTRUCTION OF THE NORMAL SCHOOL BUILDING.

ON the morning of the 10th of February, the fine structure of the California State Normal School, was discovered to be in flames. The San José Fire Department turned out promptly, but their efforts proved unavailing, and by daylight the building was a heap of shapeless ruins. The loss to the State was about \$300,000; the insurance covers \$50,000 of this amount.

The origin of the fire is, as yet, unknown. The cause generally assigned is defective flues; incendiarism has, however, been surmised.

On receipt of the news at the State Capital, a bill was immediately introduced in the Legislature, now in session, to appropriate \$200,000 for the erection of a new building. This law is now under consideration; appearances indicate its passage.

In the meanwhile, the City Board of Education of San José have placed their high school building at the disposal of the Normal School Trustees, for the accommodation of the 350 Normal School pupils. Their offer was accepted, and the school continues its sessions without interruption.

OUR ARTICLES THIS MONTH.

THE practical value of the articles in this issue of the JOURNAL, notably of Prof. Rattan's "How to Dissect an Eye," Prof. Ingham's "Primary Reading," and Dr. Anderson's historical article, has induced us to print a number of extra copies, which may be had by sending address to this office with twenty cents enclosed. Prof. Rattan's article furnishes the basis for three or four valuable object-lessons, which may be made highly useful in inculcating the principles of optics.

Dr. Anderson's article will be printed separately in pamphlet form, and sent to teachers and superintendents on receipt of six cents postage.

WHY DELAYED.

THE Pamphlet containing the proceedings of the State Association at the December meeting, is delayed on account of the failure of members to respond promptly to our request, last month, calling for subscriptions.

The publication was undertaken by us only on condition that a certain amount should be guaranteed us before commencing work. If all who desire copies of the proceedings of one of the most valuable meetings ever held on this coast, will promptly send in their remittances, we shall have the pamphlet ready in ten days from date.

REMITTANCES.

WE are not in the habit of pressing subscribers for a settlement of dues. But large sums are outstanding in every part of the State, for which we can find good use just at present. So we trust that all owing for the JOURNAL will remit soon.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

A MODEL GLACIER.—A recent number of *Nature* contains a brief account of some interesting experiments made by Messrs. D. Macfarlane and J. T. Bottomley illustrating, on a small scale, the flow of a glacier. It is so simple and economical and withal so instructive that we advise the reader to try it. Construct a little wooden ravine from three to six feet long with steep declivities, precipices, gentle slopes, and with one place at least narrowed one-half or more. At the upper end arrange a flat place upon which a mass of shoemaker's-wax is piled. This is similar to the collection of snow at the upper end of the natural ravine, and as the snow will gradually work its way down the real ravine forming those natural wonders, glaciers, so will the wax in our miniature ravine slowly, as the weeks go by, work its way down our artificial ravine, illustrating on its way the real glacier. The comparative rate of flow of the centre and sides as determined by Principal Forbes with a row of stakes, can be shown by a row of dots of white paint. If the temperature is such that the wax is at all times brittle, little crevasses will be formed.

THE KANE GEYSER.—In the spring of 1878 some parties were boring for petroleum near Kane, in Pennsylvania. After running down to the depth of 2000 feet, the well was abandoned, oil not having been found in paying quantities. For the first 364 feet occasional veins of fresh water were struck, and at a depth of 1415 feet a very heavy gas-vein was opened. When the well was abandoned the conflict between the gas and water commenced. The water flowed into the well on the top of the gas, till the pressure of the confined gas was greater than the weight of the superincumbent water, when an explosion took place, and a column of gas and water was thrown up to a height of from 108 feet to 138 feet. This occurred at regular intervals of thirteen minutes. The gas is readily ignited, and at night the spectacle is grand. In the daytime miniature rainbows are formed, and in the winter, huge transparent ice-chimneys.

PROF. LOOMIS continues his investigations of the development and phenomena of storms in the United States, in the July number of the *American Journal of Science*. In this paper, the eleventh one of its series, it is shown that atmospheric disturbances during storms do not generally extend more than about a mile above the sea level as they pass over New England. From observations made at the sea level, as at Portland, simultaneously with observations at the summit of Mount Washington, it is found that during the passage of storms the usual system of circulating winds does not in a majority of instances extend to a height of 6,000 feet. The more violent the movement, however, the greater is the height attained by the disturbance. Another fact of interest is that the disturbance on the approach of a storm is felt at the surface sooner than at considerable elevations. Professor Loomis says that "when during the progress of an area of low pressure the system of circulating winds reaches to the summit of Mount Washington, the change of wind to the east quarter usually begins at the surface stations eleven hours sooner than it does on the summit of that mountain." It thus appears that only in the lower portions of the atmosphere do the great storm movements occur, and they are first felt at or near the earth's surface.

THE illumination of phosphorescence of sea-water at night, observable in this latitude in the Summer, and at all times in tropical regions, is largely due to the noctiluca miliaris. It is a gelatinous little speck of a fellow, in shape like a peach, but only one-eighth of an inch in diameter. The light, which is a greenish hue arises from scores of minute points. A glass of water taken where these creatures are present may contain myriads of them. Nets and ropes drawn through the sea pick up millions of noctiluca, and the ropes and meshes are made luminous by them until they become dry.

PROF. EMERSON REYNOLDS, of Dublin, has discovered a new explosive, compounded of two substances, which can be kept apart without risk, and can be mixed as required to form a blasting agent. The powder is a mixture of seventy-five parts of chlorate of potassium with twenty-five parts of "sulphurea," a body discovered by Professor Reynolds, which can be obtained cheaply from a waste produce of gas manufacture. The new explosive is a white powder, which can be ignited at a lower temperature than gunpowder and leaves less solid residue.

In the Rotorua district, New Zealand, are several hot springs, one of which at least differs from any other thermal spring of which we have any knowledge. This is Tapul Te Kouth, a pool eighty feet deep, with a temperature of 90 degrees to 100 degrees when the wind is westerly or southerly; but if a change of wind to north or east takes place the water rises four feet and the temperature to 180 degrees.

THE PLANETS IN MARCH.—*Mercury* is an evening star, setting on the 11th at 7 h. 53 m. P. M.; on the 21st, 7 h. 33 m. P. M., and on the last day with the sun. He is on his ascending node on the 2d; at his least distance from the sun on the 6th; near the moon on the 12th, and stationary among the stars on the 18th. *Venus* is a morning star, rising on the 11th at 5 h. 22 m. A. M.; on the 21st at 5 h. 16 m. A. M., and on the last day at 5 h. 12 m. She is near the moon on the 8th. *Mars* sets at 1 h. 55 m. A. M. on the 11th; at 1 h. 37 m. on the 22d; and at 1 h. 18 m. A. M. on the last day of the month. He is near the moon on the 17th. *Jupiter* is an evening star setting on the 11th at 6 h. 18 m. P. M.; on the 21st just before the sun. From the 15th to Oct. 8th he sets in daylight. On the 21st he rises with the sun, and is near the moon on the 11th. *Saturn* is an evening star setting on the 11th at 8 h. 12 m. P. M.; on the 21st at 7 h. 33 m. P. M., and on the last day at 6 h. 54 m. He is near the moon on the 13th.

Liberality in educating the people is the true economy of States. What would be extravagance in one individual, whose life is limited to a few years, is economy in the life of a State or nation.—*John Swett*.

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

We would venture to suggest to the friends and patrons of the JOURNAL that we desire to make this department interesting and profitable to the *majority* of its readers. In order to accomplish this result, it is indispensable that we should receive more assistance from those interested in the subjects of Arithmetic, Algebra, and Geometry. Let us have practical problems and analyses of *general* interest. If every teacher that feels an interest in this department will contribute even his mite, this mathematical treasury will soon be overflowing.

In alluding to problem 26, Mr. C. B. Bradley, of Oakland writes:—"I have wondered somewhat, whether in propounding such tough conundrums to us, you really expect us to brush the dust of ages from our cosines and differentials, and rack our poor pedagogic brains for the solutions; or whether you are merely letting down a sounding line to find the bottom of our mathematical knowledge." In reply, we would say, that our sounding-line is not so far-reaching as that. Mr. A. F. Parsons of Adelaida, cast that line, and, if we mistake not, promised to show us a specimen from the bottom. Mr. Parsons has sent two solutions of Problem 25, one trigonometrical, the other involving the calculus. The first mentioned is taken, he says, from Loomis' Trigonometry, page 194. In the course of the second he refers to Loomis' Calculus. Mr. Bradley also sends a solution of the same problem by approximation.

Geo. E. French, a pupil of the Boys' High School, of this city, submits the following in relation to Problem 28 published in the last number of the JOURNAL.

$$(1) x^2 + y = 7.$$

$$(2) y^2 + x = 11.$$

$$(3) x^2 - 4 = 3 - y \text{ Transposing (1)}$$

$$(4) y^2 - 9 = 2 - x \text{ Transposing (2)}$$

$$(5) (x^2 - 4) - (3 - y) = 0 \text{ Transposing (3)}$$

$$(6) (\sqrt{x^2 - 4} + \sqrt{3 - y})(\sqrt{x^2 - 4} - \sqrt{3 - y}) = 0 \text{ Factoring in (5)}$$

Taking each factor separately equal to zero,

$$\sqrt{x^2 - 4} + \sqrt{3 - y} = 0$$

But since $x^2 - 4 = 3 - y$,

$$\sqrt{x^2 - 4} = \sqrt{3 - y}; \text{ and}$$

$$\sqrt{3 - y} + \sqrt{3 - y} = 0$$

$$2\sqrt{3 - y} = 0; \quad 4(3 - y) = 0;$$

$$12 - 4y = 0; \quad 4y = 12;$$

$$y = 3. \text{ and } x = 2.$$

Mr. J. O'Connor, principal of Washington Grammar School offers for solution, Problem 59, similar to one solved last year :

$$\frac{3x + \sqrt{y}}{3x - \sqrt{y}} = \frac{3}{2} + \frac{3x - \sqrt{y}}{3x + \sqrt{y}} \quad (1)$$

$$3x + y = 34 - 6\sqrt{3x + y + 6} \quad (2)$$

Mr. Kellogg of Rohnerville, inquires if the equations

$$x^2 + y^2 = 8$$

$$x - xy = 6$$

can be solved by quadratic methods.

The first equation may be put into the form

$$x^2 - 4 = 4 - y^2,$$

that is, the difference of the squares of two quantities is equal to the difference of the squares of the two quantities.

A fine solution of Problem 28 by Prof. Henry Senger of the Girls' High School, is unavoidably crowded out this month. It is already in type, and will appear in the next issue.—[EDITOR.]

CORRESPONDENCE, NOTES, AND QUERIES.

EDITOR SCIENCE RECORD.—During the eclipse of the sun Jan. 11th, I noticed a peculiarity in the shadow of slender objects, about which I wish to receive information. The eclipse here was not total. About eleven-twelfths of the sun's diameter was eclipsed. About the middle of the eclipse only a narrow segment of the sun's disc was visible on the upper limb. A plane passed through the apices of the visible portion of the sun's disc, would have been nearly horizontal. At the time I noticed that a cane, a pencil, or other slender object held in a vertical position cast a very wide indistinct shadow, being two or three times as wide as the diameter of the object itself. Change the object to a horizontal position and the shadow became of the same width as the object, just as in ordinary sunlight. Soon after the middle of the eclipse the visible portion of the sun's disc was on the western limb and a plane passed through the apices would have been nearly vertical. Now hold the cane in a vertical position and it would cast a shadow just as in ordinary sunlight. Hold the cane in a horizontal position and it again casts a shadow more than twice the diameter of the cane, in width. I noticed this peculiarity of the shadows till about half or more of the sun's disc became visible. If the sun's rays are parallel, how can these facts be explained? If this peculiarity has been noticed before and commented upon, please refer me to the explanation. The same variations in shadow may be noticed from the light of a lamp that uses a flat wick. Place a screen about twelve or fourteen inches from the lamp and hold a pencil in a vertical position about half way between the lamp and the screen. Turn the lamp so that the plane of the flat flame of the lamp is perpendicular to the screen, and the shadow of the pencil is just about the width of the pencil, and clearly defined. Make the plane of the flame parallel to the screen and the shadow is magnified and indistinct. Please answer in the JOURNAL.

Yours truly,

M. H. GATES.

Green Valley, El Dorado Co., Cal.

NEWS RECORD.

OUR record closes on February 20th.

Foreign and Domestic.

The distress and famine in Ireland continue. Active philanthropic measures for relief are in progress in England and the United States. The New York *Herald* headed a subscription in that city with \$100,000, and as much more has since been subscribed by others. It is reported that the Baroness Burdett-Coutts has given \$2,500,000 for the same object. If the report be true, then this is the most magnificent donation ever made by an individual for purposes of charity.

The Pennsylvania Convention to elect delegates to the National Republican Convention, instructed its delegates to vote for Grant as the republican candidate for the presidency. This was secured by the influence of the "machine" which is thoroughly under the control of the Camerons.

Among the eminent men who died in February was Adolph Cremieux, a well-known French statesman.

The league between Bolivia and Chile has been dissolved. It is believed that this will end the war in South America.

Another Nihilist attempt was made in February on the life of the Czar of Russia. This time a portion of the Winter Palace was undermined, and at the hour the Czar was expected to dine, this mine was exploded. A slight detention in his dressing-room saved the Czar's life, as the whole dining hall was wrecked, and about thirty-five attendants killed.

The California legislature has passed an Anti-Chinese bill, enforcing that clause in the New Constitution, prohibiting the employment of Chinese by corporations. The law is to be tested in the United States Supreme Court; preliminary steps having already been taken.

England, France and Germany have acknowledged the independence of Roumania.

It is said that negotiations are now in progress for the cession of Herat to Persia.

The British Parliament was opened on the 5th ult. by Queen Victoria in person.

Parnell, the Irish Agitator, is coming to California.

A cargo of fresh meat arrived at London from Australia in first-class condition.

The storm on the Atlantic coast Feb. 3, was the most severe and destructive ever experienced there.

Settlers in portions of Colorado are represented as being in a critical situation, being hemmed in by hostile Indians.

The number of men available for military duty in the United States is stated by the Secretary of War to be 6,516,758.

A terrible famine prevails in Mesopotamia and Kurdistan.

The total casualties in the recent railroad disaster in France are now given as 22 dead, and 116 wounded.

Vesuvius is again active.

The Panama Canal surveys are progressing.

Personal.

Herbert Spencer, the English philosopher, is sixty years old. Having been privately educated, he was at first a civil engineer. His forehead is high and he is quite bald. His face is long, and, although his features are not small, he has an unpractical and almost effeminate appearance. His portraits represent him as resting his head against his hand, in the Washington Irving style.

Major-General Chamberlain, who has been attracting a good deal of attention in Maine, was graduated from Bowdoin College and was an instructor there when the war broke out. He volunteered, was commissioned a lieutenant-colonel, and was soon made a colonel. For bravery at Fredericksburg, where he was badly wounded, he was made a brigadier-general, and the next year he was promoted to be major-general. He is now president of Bowdoin College.

Professor James De Mille, author of "The Dodge Club," and numerous other lively and interesting stories, and the popular B. O. W. C. Series of books for boys, died at Halifax, N. S., January 28th. He was a graduate of Brown University and a professor in Dalhousie College.

Dr. Huss has been appointed an assistant professor of modern languages in Princeton College. He is a graduate from the University of Jena, has been for five years professor in a philological institute at Rome, and is said to be a descendant of John Huss.

The weather-prophet of the day is Mr. Henry G. Vennor, of the Canadian Geological Service. He predicted the cold wave between Jan. 10 and 13, and the storm of Feb. 3. He predicts an immense fall of snow and very severe weather about Feb. 10, and declares that there will be more snow in March than in any other month during the winter.

Christopher Columbus had no direct male descendants, but of collateral descendants there are now living Don Diego Colombo, gentleman of the bed-chamber to King Alfonso XII. of Spain; Don Ferdinand Colombo, deputy of Porto Rico; and Christofe Colomb de la Ceda, Marquis of Jamaica.

Mr. Samuel Smiles's books are so popular in Italy that, of his "Self Help" alone, translated, fifty thousand copies have been sold in that country, and the king has now bestowed a decoration on him in token of his appreciation.

Educational.

The new president of the Board of Public Education of Philadelphia, Edward T. Steel, recommends a system of periodical re-examinations of teachers, to see that they keep themselves fresh in knowledge and on a pace with progress, so far as relates to their duties. He also advises the adoption of an additional rule, that no one shall be eligible to the position of principal who has not a thorough knowledge of the principles of instruction.

The School Question in Belgium has given rise to a singular dramatic performance, which is thus described by the correspondent of an English newspaper: "The 'Précurseur' reports that at the Episcopal College at Poperinghe, in Western Flanders, there was performed lately by the pupils before their parents a play which was received with much applause. In the first act a pupil, accoutered as a Freemason, is seen digging a grave in a cemetery, in which a coffin marked 'Catholicism' is to be placed. The Belgian Minister of Public Instruction, dressed as Satan, aids him. In the second act the grave-digger appears as teacher in a communal school. A father, entering with four sons, asks how much will be paid to him for placing his sons in the school. The bargain is made, the teacher pays, and the father pockets the money. Other pupils are received in the same manner. Instruction begins by writing on the blackboard,

'There is no God.' Now appear an old man with a boy, an angel with a scepter, and Satan in Bengal flames. The pupils fall on the ground, but the angel begins to sing the clerical war song, 'They shall not have it, the beautiful soul of the child.' Satan is put to flight, and the children are saved."—*Christian Union*.

The University of Michigan conferred last year 433 degrees on examination, and four honorary degrees. The whole number of students was 1,376, of whom 445 were in the Department of Literature, Science, and Arts. The number was greater than at any previous year. The women, 134 (41 more than the year before), form a little less than ten per cent. of the students. They are represented in all the departments. "After our nine years' experience in education," says the president, "we have become so accustomed to see women take up any kind of university work, carry it on successfully, graduate in good health, cause no embarrassment in the administration of the institution, and awaken no special solicitude in the minds of their friends or of their teachers, that many of the theoretical discussions of co-education by those who have not had opportunities to examine it carefully, read strangely to us here on the ground."

Leonard Case, who recently died in Cleveland, Ohio, left in trust property worth a million and a quarter of dollars, the income of which is to be applied to the establishment of a school, to be called the Case School of Applied Science. Much of the property is in the heart of the city, and of the most valuable in it.

Dartmouth College, with the associated institutions, has 228 students in the College, 49 in the Chandler Scientific Department, 31 in the Agricultural College, 84 in the Medical College, and 4 in the Thayer School of Engineering; in all, 396 students. About one hundred scholarships, yielding an average of \$70 a year, are assigned at the discretion of the faculty, according to regulations laid down by the founders and the rules of the institution.

By a decree of December 14, 1874, His Majesty the King of the Belgians offered an annual prize of twenty-five thousand francs for the encouragement of intellectual effort. The prize for the year 1881, for which authors of all nations may compete, will be awarded to the best work on the means of improving ports established on low and sandy coasts like those of Belgium. Foreigners desiring to compete for this prize will be required to send their works, either printed or in manuscript, to the Minister of the Interior at Brussels, before the 1st day of January, 1881. A manuscript work obtaining the prize must be published in the

course of the year following that in which the prize shall have been awarded. The award will be made by a jury appointed by His Majesty the King of the Belgians; this

jury will be composed of seven members, three of whom are to be Belgians and four foreigners of different nationalities.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

ALAMEDA COUNTY.

A new school district has just been formed in this county by cutting off a portion of Wilson District. The new district has been named Arroyo Valle.

Supt. Gilson has just apportioned \$42,000 County Fund on the basis of \$250 to each estimated teacher. Oakland obtains of the above amount, \$20,000.

P. M. Fisher, recently teacher in Lincoln District, has been engaged as principal of Washington School, *vice*, W. B. Lovett. Mr. Fisher has a good record in the district which he left, he having taught the same school about four years.

Washington school opened on the 26th ultimo.

SACRAMENTO COUNTY.

SACRAMENTO'S EDUCATIONAL SYSTEM.—Our JOURNAL correspondent recently had the privilege of spending a few days among the schools of our Capitol city, and as usual improved the opportunity by taking notes for the benefit of the JOURNAL readers.

The Public School System is at present on a firm foundation, and under the management of experienced officers. The schools are under the immediate charge of City Superintendent F. L. Landes. There are thirteen school buildings ranging in value from \$1,500, to \$90,000, and whose aggregate worth is estimated at \$280,000. The records show an attendance at these public schools of 3,530 pupils—1,719 boys, and 1,820 girls. The number of teachers is 86, and their monthly pay-roll amounts to \$5,390. If the reader here tires of dry statistics, he may find a field for interesting and fruitful thought in examining the why and wherefore of the fact that Sacramento school

girls so largely outnumber Sacramento school boys. If this proportion is maintained throughout the State, a short arithmetical calculation will show that before A. D. 1900, California will have a large surplus crop of old maids, unless Congress legalizes polygamy. But, in the words of the old philosopher, "we digress."

The high school building stands second in point of value, and is assessed at \$15,500. It is located at the corner of Ninth and M streets. Although not a mammoth pile, it is a handsome building. There are some ninety students in attendance, sixteen of whom are in the senior class. Prof. O. M. Adams is the principal, and has three assistants.

The Sacramento Grammar School (the \$90,000 building), is a large and beautiful piece of architecture. It is built of brick, and located on K street, between Fifteenth and Sixteenth streets. There are about 500 pupils in attendance. Prof. A. H. McDonald is principal, and has a corps of a dozen able teachers.

The Capital Grammar School is located on O street between Ninth and Tenth streets. Jos. W. Johnson is principal, and has nine assistants. There are about 400 pupils in attendance. Prof. E. Kemen teaches French and German in all of the afore-mentioned schools.

The remaining ten schools are scattered at intervals all over the city, and sprinkled throughout the suburbs. These comprise the fifth, sixth, seventh and eighth grades, and are controlled entirely by ladies. Indeed the male element is hardly perceptible, as regards numbers, among the public school pedagogues of Sacramento. Miss

Harriet McCormack is general principal of these last mentioned grades. In addition to the foregoing, there is a night school with an attendance of about fifty pupils, which is conducted five months in the year. Prof. W. J. Hyde is principal, and Mrs. Merrill is assistant.

The private school system includes, first, the Sacramento Seminary, a boarding school for young ladies, established in 1863. Mrs. Hermon Perry is principal, and has a full faculty of capable instructors. Pupils are taken in the primary department, and conducted through an entire and comprehensive course. The educational standing is first-class. Howe's High School and Normal Institute is conducted by Prof. E. P. Howe, and is well known. Young ladies and gentlemen here receive a business education, are prepared for college or for teaching, as the case may be. There are about eighty scholars in attendance, under the guidance of four instructors. The two Catholic schools are the Sacramento Institute and the St. Joseph's School, respectively for gentlemen and ladies. The former has ten teachers, and is said to have about 350 pupils. Prof. Atkinson's Business College, Goethe's German School, and Hunt's Seminary complete the regular list. Besides these, there are numerous primary schools, several music schools, and art schools. Sacramento with an estimated population of 25,000, numbers about 4,500 in her school-going population.

But hold! We almost omitted a forensic school which is at present in session at the State Capitol. The boys in the higher grade behave pretty well; but the urchins in the Assembly Chamber are noisy and badly governed. Georgie Tyler and Sammy Braunhardt, two bad boys from the Bay, are constantly making faces at each other, and threatening to "lick" each other and the teacher. Something must be done!

SAN FRANCISCO COUNTY.

The Board of Education had two meetings in February, and continued the work of reform(?) The teaching of Drawing by the special teachers, was discontinued from March 1st, and Music from June 1st. On what principle, economic or otherwise, this action was taken, we fail to see. Of the

two branches, Drawing is certainly the more valuable in its bearing upon the objects for which our public schools are established. Drawing has not been taught in the public schools as a fine art or accomplishment. It has been and is one of the most important educational agencies to secure that eye and hand-training, which is already relegated to an inferior place in our system of all-mind and no-body culture. What presents this matter in a worse light is the fact that not ten per cent. of our teachers are competent to teach Drawing without the special teachers, while ninety per cent. can do as good work in the music teaching as is done now by one-half the special teachers in that branch.

M. C. Brophy, assistant in the Ungraded School has resigned.

In February the principal of the Broadway Grammar School was suspended for one month, on account of "unprofessional conduct." As we understand the matter, he had reported one of his assistants incompetent to teach her class. The Classification Committee thereupon assigned the lady to a lower grade, and on her request for an explanation, informed her of her principal's report. She expressed great surprise, as he had always expressed himself (so she said) well satisfied with her teaching. She was told to get from him a written testimonial to this effect. This, it appears, the principal gave on her application. The Classification Committee on becoming aware of all these facts, recommended his temporary suspension, and the Board so ordered. This action of the Board is to be commended, and we trust it will prove a warning to those principals who say one thing to their assistants, and the opposite to the Superintendent or to School Directors. Some such example was needed. There is no position where "backbone" is more necessary than in a principalship. And while a great majority of our principals are high-minded, cultured, and thoroughly competent, we yet believe there are some who will bear watching better than their less fortunate assistants.

The Board have examined the Kindergartens in this city conducted by Miss Kate

Smith, and Mrs. Cooper, and it is believed will incorporate some system of Kindergarten instruction with the public schools of this city.

We had occasion, in our last issue to commend the stand taken by Director L. H. Van Schaick and Superintendent John W. Taylor, in regard to the general conduct of school matters in this city. These gentlemen have not been alone in their efforts, but have been heartily seconded by Messrs. Darling, McDonnell, Ferguson, and Hussey. The three last named were elected on the Workingmen's ticket, and have shown that that party may consistently claim to be more friendly to a broad and liberal system of popular education, than a majority of their Republican opponents.

SAN LUIS OBISPO COUNTY.

From a letter received from Supt. JOHN F. BECKET, we make the following extracts.—[ED.]

The schools of this county are generally closed for the winter vacation.

Mr. J. W. Stringfield, one of our best teachers, has resigned as principal of the San Luis schools, and taken a school at Guadalupe, Santa Barbara County.

Mr. James A. Ford, another first-class teacher will close school in Laguna district next week, and remove to Laguna district in the same county.

Mr. C. H. Woods, my worthy opponent in the recent election, succeeds Mr. Stringfield in the city schools. I was tendered the appointment, but could not accept owing to the fact that I was under an engagement at Arroyo Grande for the present school year.

My own school is in session with a goodly attendance. Will have at least seventy-five pupils in regular attendance as soon as Spring opens.

Ex-Superintendent Darke has made an able and efficient superintendent, and the schools of the county were never in finer condition than at present. Home District has been fortunate in securing his services for the spring term. Other teachers have received appointments as follows :

J. L. Raines—Franklin District ; Jno. W. Raines—Excelsior District ; A. F. Parsons—Las Tablos District ; B. H. Franklin—Washington District ; Charles M. Lovett—Olmsted District ; Mrs. C. M. Lovett—Ascension District ; W. J. Evans—Santa Rosa District ; William E. Burrell—San Simeon District ; Willis Chamberlain—Harmony District ; George H. Bentley—Central District ; C. H. Woods, principal—Mission District, with the following assistants: D. M. Meredith, Miss Sadie Holloway, Miss L. Ross, Miss Root, Miss Anita Murray, Miss Adelia Madden.

But few of the other schools will be in session during the present school year.

J. M. Felts has been teaching an evening class in Commercial Arithmetic, Book-keeping, etc.

Prof. Meredith has just closed a very successful private school.

Prof. Cameron and wife have recently organized a commercial school which is being well patronized.

A new district has been formed called the Mountain View.

The Board of Supervisors lately granted the Superintendent of Schools office room in the Court House, where the office will doubtless be kept during the term of the present incumbent.

No action will be taken in relation to the adoption of text-books until the legislature passes the necessary laws. We are fortunate in possessing an excellent Board of Supervisors, men of liberal and comprehensive views, who will doubtless work in full accord with the School Superintendent for the welfare of the schools.

NEVADA COUNTY.

The North San Juan Trustees contemplate entering into a contract with the present efficient teachers, Mr. Tiffany and Miss Downey, for a term of three years.

NAPA COUNTY.

The Calistoga schools reopened on the 2d ult., with G. W. Weeks as principal, and Miss Anna M. Boyd as assistant.

SANTA CRUZ COUNTY.

Miss Edith Rivers is about to resign her

position as teacher in the Santa Cruz schools, to assume a more lucrative position in Monterey county.

Charles A. Michener has been reelected for another term by the Boulder Creek District Trustees.

OREGON.

D. T. STANLEY, Editor, No. 9 Dekum's Building, Portland.

ASSOCIATES:

R. K. WARREN, Portland. J. T. GREGG, Salem.

All communications and business letters should be addressed to the editor.

INTRODUCTORY.

After a year's relief from editorial work, I find myself again called to perform part of the responsible duties of the management of the PACIFIC SCHOOL AND HOME JOURNAL, by my fellow teachers of Oregon. I undertake the work with much reluctance on account of physical infirmity, but with the co-operation of the educators of the northwest coast, together with the well-earned reputation of the JOURNAL, already made by its editor and publishers, I doubt not we shall be able to have a periodical to ably represent not only the Northwest, but the entire Pacific Slope.

For three years California teachers with Prof. Albert Lyser as their leader have ably sustained their most worthy enterprise. The Northwest has agreed to co-operate, and now let every teacher into whose hands a copy of this may fall, become at once the missionary to introduce the JOURNAL into every school and family.

A large number of our ablest teachers have agreed to furnish articles on various topics during the year. Let every teacher of the coast make the JOURNAL his "organ" for any matters of public educational interest. Respectfully,

D. F. STANLEY.

MARION COUNTY.

The register of the Willamette University shows over one hundred in attendance, with the singular fact that the young ladies over twenty years of age, outnumber the young men above that age.

JACKSON COUNTY.

Jacksonville district commenced its school term December 8th, with an attendance of 240 pupils, which has been constantly increasing since.

DOUGLAS COUNTY.

Umpqua Academy, situated at Wilber, opened the first Monday in September under the management of Rev. S. Franklin, a graduate of Delaware University, Ohio. As the principal is a man of experience, and the location is healthy with no saloons nor immoral influences, we hope to hear of a prosperous future for this aspirant for public favor and patronage.

POLK COUNTY.

The public schools of this county are doing well. The county institute was held at Dallas, in November. The attendance was not large on account of the very unfavorable weather. Addresses were delivered one evening by Prof. L. J. Powell, State Superintendent, in his usual vigorous and happy manner, and Prof. D. T. Stanley of Christian College and Oregon Normal School. The next evening was devoted to discussions.

There are two institutions of high grade, partly public in the county; Bethel Academy, Bethel, and La Creole Academy, Dallas. These are both doing well. Fuller notices of them will be given hereafter. Christian College and Oregon Normal School, Monmouth, is quite prosperous, with a large attendance from the various parts of the north-west coast. The Normal class is of good size, and fine interest is

shown in studying education as a science, and teaching as an art.

The La Creole Academic Institute has been greatly improved under the management of Prof. Randle, the present principal, and we are now in receipt of the announcement of a Business College in connection with the Academy, with W. S. James the famous penman, as manager. A sample of their Business College script sent, is in good taste, and if we can only cash that \$100 now, we could afford to send the JOURNAL to a number of *old fogy school-keepers* who "don't take no papers, and don't believe in these new fangled ways of teaching."

BENTON COUNTY.

President Arnold and Prof. Hawthorne of the Agricultural College, have taken claims over on the Alsea, and put in their vacations over there studying the practical part of agriculture. The college is prospering and growing more popular each year.

MULTOUOMAH COUNTY.

The first term of the school year in Portland, closed Jan. 30th. A vacation was given till Feb. 9th. The pupils made a fine showing on their examinations. The reputation of our Portland schools, as being

among the best on the coast, is fully maintained by the past five months' work.

Harrison Street school house was opened on the reassembling of school, Feb. 9th. It contains accommodations for about 600 pupils, but there are 100 more than that number in the district. It is understood that those who cannot be accommodated in the new building will have rooms assigned them in the Park building. We congratulate Prof. Pratt on getting home again, as he has been laboring under disadvantages in conducting his school in different parts of the city since the old Harrison Street school-house was burned some months ago.

Prof. B. Robb retires from the principalship of the East Portland schools, and is succeeded by Mr. Ewing, a young law student.

YAMHILL COUNTY.

The public school house, a two-story frame building, nearly new, was badly wrecked by the storm of Jan. 9th, and school had to be adjourned for several days till repairs could be made. Nearly all the schools in the State adjourned on that day, long to be remembered on account of the great storm.

NEVADA.

HENRY F. BAKER, Editor, Virginia City.

The Gold Hill Board of School Trustees have recently ordered that two outside schools be closed, and that primary children be allowed to attend school only half a day. This course was rendered necessary on account of the cramped condition of the finances.

Dayton people contribute towards the maintenance of their schools by giving monthly balls. One hundred dollars were raised in that manner last month.

A movement is on foot looking towards a uniform grading of the schools of Virginia and Gold Hill. These two contiguous cities form but one community in reality, and it would be a great convenience if the two sets of schools could be adapted to the same course of study and system of teaching.

Military discipline in entering and leaving the school building is maintained in Gold Hill. The "High School Guard" is a well drilled company of boys from the High School. They are furnished with the United States regulation muskets.

The "Quincy Method" is being put into practice by some of the Nevada teachers.

Miss L. A. Plummer, of the Silver City schools has been quite sick.

There were 1491 scholars enrolled in Virginia city during the month of January—material for twenty-nine teachers.

Professor D. A. Ewing, for three years Principal of the Virginia City High School, died at his home in Golden Corners, Ohio, on the 4th ult. He had suffered over four months from an attack of brain fever, brought on, it is believed, by over-exertion

in connection with his school work. As an educator he stood at the head of his profession in Nevada. He had had some twenty years experience in the schoolroom, and was an unusually successful teacher. As a token of regard to his memory, his late scholars of the High School have had a fine portrait of the deceased placed in his old room. But after all he has left a better likeness and a more imperishable memorial tablet in the minds and hearts of his pupils. He can never be forgotten while those live on.

The matter of a uniformity in grades between Gold Hill and Virginia has proved to

be impossible. The principals are at variance as to methods and matter, and an agreement cannot be arrived at.

WASHINGTON TER.

CLARKE COUNTY.

A large tree was blown on the schoolhouse at La Center during the storm of Jan. 9th. The tree came with such force that all in the house were knocked senseless. Two children were killed. All were hurt more or less except one boy. The teacher, a lady, escaped with only a sprained wrist.

OFFICIAL DEPARTMENT.

BY the active kindness of State Superintendent Frederick M. Campbell, the JOURNAL is enabled to present its readers an accurate synopsis of

THE NEW SCHOOL LAW.

1. The State Board is reduced to three members, Governor, Superintendent of Public Instruction, and Principal of the State Normal School. Life diplomas and educational diplomas still to be issued.

2. Organizing County Board of Education of County Superintendent and four members appointed by Board of Supervisors, two of whom shall be teachers.

3. Strikes out the "color line"—no more separate schools for colored children.

4. Only two grades of district schools, grammar and primary, and only two grades of certificates—first and second grades.

5. Makes eighty census children and one teacher, in place of, as heretofore, one hundred; and thirty in place of fifty, for share of balance of school fund. (See Sec. 1858.)

6. Throws additional guards around use of library funds.

7. No one can be elected teacher whose father, husband, brother, uncle, or cousin is on the Board of Trustees or Education.

8. No one to have a certificate or to teach who is less than eighteen years old.

9. Gives trustees power to call district meetings, competent to instruct said boards upon certain subjects. Such instructions to be binding.

10. Same cost to school fund of assessing and collecting special school taxes.

11. Gives State Superintendent power to call a convention biennially of County Superintendents and compels their attendance, and provides for their traveling expenses.

12. Levies a tax of one dollar upon each person examined for certificate, or getting certificate upon diplomas of other States, for benefit of school fund.

13. In the adoption of text-books, provides,

(1.) Sixty days' notice to be given.

(2.) Changes only can be made in the month of May.

(3.) Sealed proposals received and opened in public at the hour and day stated in notice.

(4.) Successful bidder to give bonds for furnishing books at retail price in county for four years.

(5.) Award must be made within ten days.

14. Provides severe penalties for malfeasance in office of any member of a Board of Education.

15. Gives State Board power to adopt an official organ to go into library of every district.

STATE OF CALIFORNIA—DEPARTMENT OF PUBLIC INSTRUCTION.

OFFICE OF CONTROLLER OF STATE,
SACRAMENTO, CAL., February 20th, 1880. }

Hon. F. M. Campbell, Superintendent of Public Instruction :

SIR: In compliance with an Act of the Legislature, I have the honor to report as follows :

The securities held in trust for the School Fund by the State Treasurer consist of bonds of the State of California bearing interest at legal rates, amounting to one million seven hundred and thirty-seven thousand five hundred dollars (\$1,737,500), together with bonds of different counties of this State bearing interest at legal rates, and aggregating two hundred and sixty-nine thousand three hundred dollars (\$269,300).

The money in the State Treasury subject to apportionment is one million two hundred and seventy-one thousand eight hundred and fifty-sixth and five one-hundredths dollars (\$1,271,856 05), to wit :

Balance of August apportionment not distributed.....	\$	731 98
Interest on bonds held in trust.....		68,358 15
Interest on State school lands.....		21,005 43
Sale of Geological Survey Reports.....		15 00
Property tax (twenty-six cents on each one hundred dollars valuation for current year).....		1,181,745 49
		1,271,856 05
Subject to apportionment.....	\$	1,271,856 05

Yours respectfully,

D. M. Kenfield, Controller.

APPORTIONMENT.

Total number of census children between five and seventeen years of age, entitled to receive school money, 216,404; amount per child, \$5 87; amount apportioned, \$1,270,291 48.

FRED. M. CAMPBELL,
Superintendent of Public Instruction.

Sacramento, February 21st, 1880.

BOOK NOTICES.

ARITHMETIC FOR YOUNG CHILDREN. By Horace Grant. American edition edited by William Small. Boston: Lee & Shepard. 16 mo. 134 pp. Price 35 cents.

If this book were reviewed by its size and the quantity of its contents, it might be dismissed in three lines: measured by the originality of its plan, the exact regularity with which each step is carried out—its intrinsic merit—and a page is insufficient. When we speak of the plan of this work as entirely original, we go a little too far, perhaps. It embodies the main ideas of the Grube System, but here it is the Grube System Anglicized. We have, as in Grube, combinations of small numbers; in this book, the limit is *thirteen*, and every possible combination is effected. Next, all instruction is by means of objects. In fact, counting by objects is the initial lesson, for, as the author observes: "When a child sees four counters or two pebbles, he understands their number long before he has any clear notion of the words four and two, used alone." Experienced teachers know that in no branch is rote-teaching more pernicious than in arithmetic. We constantly go over and over the same ground with our pupils, only to "graduate" them at last, unprepared to perform with reasonable certainty, the most elementary operations. We ascribe our lack of success and justly, though the phrase is hackneyed enough—to lack of good teaching in the lower grades. This really is the fault; and we confidently believe that in the system of which this little book is an exponent, lies the remedy. More practice and less theory: examples on what children can understand, what they see around them, what they hear about them is worth all the "explaining" and "lecturing" in the world. Another common error, which is attacked in the plan of this book, is the practice of giving numbers beyond the child's comprehension, numbers which he would have little occasion to use in after life. Still another fault

in the arithmetic teaching of the day, is the subordination of mental to written arithmetic—a not unnatural, but extreme reaction against the mathematical syllogisms, which passed current as mental arithmetic a generation ago. In this book, all operations are mental—but they are such operations as would be and should be mentally performed through all the practical experience of life. We recommend this book very earnestly to the attention of all teachers. It is destined to effect a revolution in our present methods of arithmetic teaching in the primary grades.

A POPULAR CALIFORNIA FLORA, OR MANUAL OF BOTANY FOR BEGINNERS. With Illustrated Introductory Lessons. By Volney Rattan, Teacher of Natural Sciences in the Girls' High School, San Francisco. Second Edition, Revised and Enlarged. San Francisco: A. L. Bancroft & Co. 128 pp. Price, \$1.50.

Prof. Rattan's little book, with the same title, issued about a year ago, has proven so marked a success, that we now have before us the second edition. The work is and yet is not, the same. First, a noticeably great improvement is observable in the mechanical department. The general typography is the same as in the first edition, but errors of various kinds have been expunged. The binding is improved, and the covers are handsomer, the whole appearance inviting and highly creditable to the Pacific Coast firm whose imprint it bears. In the book itself, Prof. Rattan carries out completely and logically, his idea of a working manual to enable beginners to know and name those varieties of plants in Central and Western California, which are noticeable by reason of their conspicuous flowers. Particularly valuable features of this revised and enlarged edition, are fifty pages of new matter devoted to Introductory Lessons, illustrated by 63 cuts drawn on wood by the author; descriptions of plants belonging to the Apetalae and the Endogenae; a

Glossary of Generic and Specific names, and a complete index of Common and Scientific names. The Introductory Lessons are designed, not only to instruct the pupil how to use the Flora, but also to make clear to him how botany can be learned from the book of nature. The Glossary of Generic and Specific Names will be appreciated by those who like to know reasons for such elongated names as *Helianthemum* and *Mesembryanthemum*, such tongue twisters as *Jussiaea* and *Glycyrrhiza*, or such orthographic monstrosities as *Eschscholtzia*, *Xerophyllum* and *Ptelea*. We are glad to find that *Fringe Rod* means as much as *Thysanocarpus*; and it is comforting to know that the old fellow, in whose honor the name *Boschniakia* was inflicted on a innocent plant, is a Russian. We predict for this edition, greater success even than the first.

A TEXT-BOOK ON CIVIL GOVERNMENT IN THE UNITED STATES. By George H. Martin. New York: A. S. Barnes & Co. San Francisco: Edward F. Adams.

This, on the whole, is the best manual of civil government, we have yet seen. A book on the subject should be in the hands of every teacher, if not placed for use in the schools. Amid the superabundance of studies that demand admission to our course of study, it is difficult to draw the line, or to decide which to admit and which to reject. It seems, however, that our youth should obtain a more adequate, more correct idea of our National and State Governments, of the principles on which government is established and society organized, than they now do. We believe nine-tenths the crude theories now extant, would be wiped out; seven-eighths of our blatant demagogues rendered occupationless, if the masses had a better understanding of the nature of a republican form of government.

The book before us is calculated to do much good in the way indicated. It includes a full treatment of principles, and is not crowded with details. It pursues the historical method; that is, shows by a recital of historical facts, how political rules were established.

The political organization of every State in the Union is briefly, yet clearly given. The mass of students and teachers, may omit this part without injury. We recommend the book to teachers as well designed for the purpose intended

LITERARY NOTES.

The *Atlantic Monthly* for March is a number that requires no illustrations to render it attractive. In fact, without becoming more sensational or less classic, there is an evident revival in this magazine, which if continued, will place it without a peer on either side of the water. Howells, Aldrich, Richard

Grant White, and Warner are among the eminent names in this number. And among the interesting subjects we must name "Reminiscences of Washington;" "The John Quincy Adams Administration;" "English in England;" "Washington Irving," and "The New Departure in the Public Schools."

The March *Scribner* is, if such a thing were possible, even more beautiful and valuable than ever before. Eugene Schuyler's "Peter the Great," with its almost infinite variety of pictures, illustrating every phase and condition of Russia in the Middle Ages, is the most valuable contribution to American periodical literature, which has appeared in the past two decades. Another interesting article in the March number, is a racy account of the French humorist "Cham." The two serials "The Grandissimes" and "Louisiana" increase in interest.

Appleton's Journal for March is a number which will compare favorably with any similar publication in America. Among the contributions particularly noticeable are: "The Return of the Princess," which gives some striking inside views of harem-life at Cairo. The Duke of Argyll's second and concluding paper, "First Impressions of the New World," is given. There is an interesting article on "Russian Nihilism;" a very striking satirical essay, under the title of "A Turkish Effendi on Christendom and Islam;" a biographical essay on Thèophile Gautier; and two papers, respectively designated "Flesh-Color" and "Life at High Pressure," which embody numerous anecdotes and some telling hits at social follies. The freshest feature of the number is a group of three poems, translated from the French poet François Coppée, accompanied with an introductory note.

Lippincott's Magazine, for the high literary value of its contributions, their variety and number, now fairly ranks with the first-class American Monthlies. In this March number we have a fair sample of its usual grade. Among the articles we will name: "The Lakes of Minnesota" by Alice Ilgenwitz; "Summerland Sketches—Yucatan," by Felix L. Oswald; "Old and New Rouen," by Edward King; "At the Foot of the Sierras," by Louise Coffin Jones; "Decorative Art and its Dogmas," by M. G. Van Rensselaer; "Playing a Part," a Comedy for Amateur Acting, by J. Brander Matthews; "The American Suez," with maps, by F. L. O.

With the single omission of articles on the topics of teaching, *The Popular Science Monthly* ranks as the great modern educational journal of the world—without a peer, and without a rival. This March number is strong in its array of great names; and specially valuable to teachers by reason of many articles on educational topics. Among them we will name: "Dolmens in Japan," by Prof. Edward S. Morse (Illustrated); "The Study of Political Economy," by Henry George; "Ward's Natural Science Establishment," by Prof. Joseph Leidy; "The Force Behind Nature," by William B. Carpenter, F. R. S.; "New Views of Animal Transformations," by Edmond Perrier (Illustrated); "Intemperance in Study," by D. Hack Luke, F. R. C. P.; "The Early Free Schools of America," by Alice H. Rhine; "Athletics in Schools."

THE PACIFIC
School and Home
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ORGAN OF THE
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VOL. IV.

SAN FRANCISCO, APRIL, 1880.

No. 4

RAINFALL WEST OF THE SIERRA NEVADA
AND CASCADE MOUNTAINS.

BY PRESIDENT JOHN LE CONTE, LL. D.

[University of California.]

AT first we might suppose that as all the great belt of country lying west of the Sierra Nevada and Cascade mountains, is exposed to the full influence of the vapor-bearing west winds coming from the vast water-surface of the Pacific Ocean, it would receive an unfailling and bountiful supply of rain. The interposition of the comparatively low coast-ranges, between the great valleys of California and Oregon, and the vapor-bearing winds from the Pacific could hardly be expected to produce any great diminution in the supply of moisture reaching these valleys. Yet, the fact is far otherwise. Indeed, west of the coast-ranges, no less than on the great California Valley the rain-fall, although usually sufficient to assure a remunerative return to the farmer, is frequently very scanty, especially in the southern portions. Considering the comparative proximity to the great water-surface and the direction of the prevailing winds, it is astonishing how little rain falls on the Pacific Coast between San Diego and Cape Mendocino. Not only is the amount of rain-fall smaller than might be expected, but it is quite irregular, and thus involves the element of

uncertainty. For example, we have the following extreme fluctuations in the annual rain-fall at San Francisco and Sacramento :

SAN FRANCISCO.		SACRAMENTO.	
<i>Season.</i>	<i>Rain-fall.</i>	<i>Season.</i>	<i>Rain-fall.</i>
1850-51	7.40 inches.	1850-1	4.71 inches.
1861-62	49.27 inches.	1861-62	35.55 inches.

TABLE OF RAIN-FALL.

The following table exhibits in a striking manner the increase of rain-fall as we advance northward along the Pacific Coast :

RAIN-FALL WEST OF THE SIERRA NEVADA MOUNTAINS.

<i>Station.</i>	<i>N. Lat.</i>	<i>Coast or Valley.</i>	<i>Average Rain-fall in Inches.</i>					<i>Rec. in Years.</i>
			<i>Spring.</i>	<i>Sum'r</i>	<i>Aut'mn</i>	<i>Winter</i>	<i>Year.</i>	
Fort Yuma.....	32° 44'		0.25	0.68	1.49	1.04	3.46	9¼
Fort San Diego..	32 42	coast	2.02	0.45	1.48	5.21	9.16	13
Drum Barracks...	33 49	coast	2.93	0.60	0.30	8.00	11.83	2¼
San Francisco....	37 48	coast	5.48	0.07	3.58	14.91	24.04	23
Sacramento.....	38 34	valley	5.57	0.10	2.68	11.03	19.56	18
Fort Humboldt...	40 45	coast	9.36	0.73	6.50	19.33	35.92	11 1-6
Camp Gaston....	41 10	coast	13.17	1.21	12.18	35.64	62.20	4½
Fort Umpqua....	43 42	coast	16.83	2.86	15.64	32.08	67.41	6
Astoria.....	46 11	coast	19.62	5.63	18.44	34.91	78.60	18
Fort Stevens....	46 12	coast	9.14	6.54	19.12	51.02	85.82	1
Sitka.....	57 03	coast	14.51	15.66	30.99	22.23	83.39	16¼

ABNORMAL DISTRIBUTION OF RAIN ON THE PACIFIC COAST.

A glance at the foregoing table reveals several remarkable and seemingly abnormal results in relation to the distribution of the rain-fall along the Pacific Coast.

(1.) The annual rain-fall augments with the increase of latitude. Thus, the annual amount of rain varies from less than four inches in the Yuma and Gila Deserts at the head of the Gulf of California, to eighty inches on the coast of Washington Territory. Now, it is well known, that the general law is, that the average fall of rain is greatest near the equator, and diminishes as we proceed towards the poles. This law evidently depends upon the relation which the tension of the vapor at the water-surfaces usually bears to the efficiency of the solar radiation incident in different latitudes. Under normal conditions, the greater perpendicularity of the solar rays incident in lower latitudes, imparts a higher temperature to the oceanic surfaces, consequently a higher tension to the aqueous vapors contained in the superjacent air ; so that an equal reduction of temperature must precipitate a larger amount of moisture in a warm than in a cold climate. Thus, the following table shows the average annual rain-fall in different latitudes, according

to the estimates of Professors Loomis and Guyot ; to which are added two columns, likewise indicating the decrease of rain-fall with increase of latitude.

LOOMIS.		GUYOT.		Annual Rain-fall in Inches.		Annual Rain-fall in Inches.	
Lat.	Rain-fall in Inches.	Lat.	Rain-fall in Inches.				
0°	104	0°	100	Tropics.....	102	Tropics.....	96
10	85	20	80	Temperate Zones....	36	Italy.....	45
20	70	30	60	Frigid Zones.....	12	England.....	37
30	40	40	40			N. Germany.....	22½
40	30	50	30			St. Petersburg...	17
50	25	60	20				
60	20	70	10				
		80	5				

It is evident, that on the Pacific Coast this general law is completely reversed ; and it is equally obvious, that there must exist some active physical cause adequate to produce this anomalous result.

(2.) The second abnormal result indicated by our table of rain-fall on the Pacific Coast, is, that at Cape Mendocino (or about latitude 40° to 41°), there is a sudden increase of the annual rain-fall, from about twenty inches to forty-four inches or more ; with a more gradual augmentation from this latitude in advancing northward along the coast.

(3.) The third abnormal result indicated by the same table, is, that between San Diego and Cape Mendocino (from latitude 32° 42' to latitude 40° 26'), scarcely any rain falls during the three summer months ; but, that north of the latter point, the rains are more uniformly distributed throughout the different seasons, although the winter still continues to be the period of greatest precipitation. The contrast in this respect, between the distribution of the rain-fall according to seasons, on this coast, and that on the Atlantic Coast of the United States, is strikingly exhibited by the following table of the average rain-fall according to seasons at various points along the latter :

RAINFALL ON ATLANTIC COAST OF UNITED STATES.

Station.	N. Lat.	Average Rain-fall in Inches.					Rec. in Years.
		Spring.	Sum'r.	Aut'mn	Winter	Year.	
Fort Pierce.....	27° 30'	9.86	22.62	14.74	10.80	58.02	6½
Jacksonville.....	30 20	10.91	21.07	12.04	8.70	52.72	6
Savannah.....	32 05	10.65	20.62	8.63	8.42	48.32	23 1-6
Charleston.....	32 47	8.00	17.97	10.87	8.27	45.11	22
Fortress Monroe.....	37 00	10.17	15.32	10.88	10.67	47.04	19½
Washington.....	38 53	10.16	12.77	8.10	10.02	41.05	5
Fort McHenry.....	39 16	10.79	10.83	9.97	9.51	41.10	23 1-6
Philadelphia.....	39 57	11.10	12.58	10.46	9.91	44.05	43

(4.) The fourth fact shown by the table of rain-fall on this coast, is not anomalous,—being in conformity with the general laws of rain.—It is that the amount of annual rain-fall in the great California and Oregon valleys, is con-

siderably less than it is on the sea-coast west of the coast ranges. This is much more conspicuously true in latitudes north of 41° , where it is surprising how quickly the atmosphere becomes drained of its vapor as we leave the coast and proceed inland. The Coast Range mountains along this portion of the coast, being cooler, act more powerfully as condensers as the vapor-bearing winds are forced up their western slopes.

THE VISION.*

BY GEORGE GOSSMAN.

ON THE STRAND.†

THE night again is approaching,
 In mists adown the bay ;
 I hear the wave's plaintive wailing,
 And see the foaming spray.

I see a white form arising ;
 A maiden from the sea ;
 And in her veil-decked body,
 She softly comes to me.

She kisses me and she presses
 'Till I am sore afraid
 And say :—You press me too tightly
 My sweetest water-maid !

But after all it is charming,
 And why am I afraid ?
 So give my poor heart a warming,
 My sweetest water-maid !

The sea-gulls are loudly shrieking,
 And now I've fears for thee,
 For thy heart is loudly beating,
 Sweet maiden of the sea !

Says she :—“ *Fear not it is beating
 So wildly and so warm ;
 Since I unspeakably love thee,
 Thou dearest human form !* ”

The moon grows pale and alarming.
 Thy cheek begins to fade ;
 And tears in thy eyes are forming,
 My sweetest water-maid !

*After the German of Heine.

†From off the Tamalpais.

Says she :—"The tear that is forming
 And in mine eye you see,
 Is but a drop from the ocean
 I brought along with me."

OUR TITLE TO OREGON.

BY JOHN J. ANDERSON, PH. D.

IN a former article we showed that no part of the territory west of the Rocky Mountains was ever any part of the region that came to us from France in 1803. As the "Louisiana Purchase" extended as far west as the Rocky Mountains and no farther, the region beyond, from the forty-second degree of latitude to the forty-ninth, came to us in some other way. In what way it is our present purpose to show.

It is certain that the Spaniards were the first navigators to reach the western coast of North America. Their explorations, begun by Cortez and under his direction, were continued (in 1542) by Cabrillo, who examined the coast as far as the northern limits of San Francisco Bay. The death of Cabrillo occurring while he was engaged in this enterprise, his pilot, Ferrello, prosecuted the undertaking, reaching the point, as far probably as the forty-third degree of latitude (1543.) Soon Spanish galleons crossed the Pacific from Mexico to the Philippine Islands and China, and, returning, were compelled, by reason of the easterly or trade-winds in the lower latitude, to take a northward course. In consequence, they often struck the North American coast far to the north of Mexico, in one case, it is asserted, beyond the fifty-seventh degree.

Up to 1575 no English vessel had been in the Pacific. In that year a party of English freebooters, commanded by John Oxenham, crossed the Isthmus of Darien, built a small vessel, launched it on the Pacific, and, for several months, pursued a career of piracy, Spanish vessels, of course, being the victims. At length they were captured, and with few exceptions, hung. Three years later their fate was avenged by the "splendid pirate," as Bancroft calls him, Francis Drake. Entering the Pacific by way of the Straits of Magellan, Drake plundered the Spanish settlements on the west coast of America, captured, pillaged, and destroyed Spanish vessels; and then, surmising that the people whom he had so cruelly treated were making preparations to intercept him on his return, resolved to make an attempt to reach England by sailing across the Pacific and around the northern part of Asia and Europe. After sailing in a north-westerly direction for several weeks, and encountering cold and violent rains, he put back to the American coast. Abandoning the attempt northward, from San Francisco Bay or the Bay of Bodega—it is not certain which—he made his second, and, as it proved, successful departure. What

extent of coast Drake saw is not known. He never made any report, either by journal or other writing; but it is certain what he did see had been previously seen by the Spaniards.

For a period of nearly two hundred years, if we except a voyage made by Vizciano, in 1603, under instructions from King Philip II., of Spain, no attempts were made to explore any part of the north-western coast of North America. Vizciano's explorations extended to the forty-third parallel of latitude; and, till 1774, nothing was known, with certainty of any part of the coast further north as far as Alaska. Then, by direction of the Spanish king, four exploring voyages were sent in quick succession from Mexico, and the coast, as far north as the fifty-sixth degree of latitude, was carefully examined (1774-1779). Up to this time and till 1790, Spain's claims to the western side of America, as far north as Alaska had at no time been called in question. Important explorations, however, had been made on the extreme north-west part of the continent in behalf of the Russians. Behring's Straits had been entered by the daring navigator whose name it still bears, and, between 1741 and 1770, the whole of the Alaska coast, down to its southmost point, was explored.

We have noticed the voyage made by Francis Drake (1577-1580). No further explorations were made by the English in the North Pacific for a period of about two hundred years. Then the celebrated Captain Cook appeared upon the ocean. It was believed at that time that there existed a passage connecting Hudson's Bay with the Pacific. Cook's object was to find it. He entered the Pacific, doubling the Cape of Good Hope, and in January of 1778, discovered the Sandwich Islands. Steering eastward he reached the American coast, and traced it more than two thousand miles, but as the same had already been explored by the Spaniards or Russians, no claim, on the ground of first discovery, could be accorded to him. Other voyages were made to the coast by Russians as well as Englishmen, their object, in most cases, being for furs; but none of them were of any importance as respects our present investigations. We now come to the facts upon which the government of our country based its claim to the Oregon region. By this term—the Oregon region—we mean all the domain west of the Rocky Mountains now included in the State of Oregon and the territories of Washington and Idaho.

In the latter part of 1787, the ship *Columbia*, commanded by John Kendrick, and the sloop *Washington*, commanded by Robert Gray, sailed from Boston. They were laden with an assortment of "Yankee notions," the vessels and cargos being owned by a company of Boston merchants, whose object was to open a trade for furs along the north-west coast of North America, and to combine this with a trade to China. Both commanders were provided with letters in conformity with a resolution of Congress, and also with friendly letters from the Spanish ministers in the United States. Soon after passing around Cape Horn, the two vessels were separated by a violent storm, but succeeded in joining each other again in Nootka Sound, on the west of Vancouver's Island, where they remained till the spring of 1789. During the summer of that year, while the *Columbia* remained at anchor in the sound, Captain Gray,

in his little sloop of less than a hundred tons, made several excursions north and south along the coast, returning with the furs procured, and transferring them to the Columbia. In these excursions he made important explorations, and was the first navigator to pass between the main land and many islands off the coast. Leaving Kendrick, by agreement, Gray, in the Columbia, proceeded to China, exchanged his furs for a cargo of teas, sailed around the Cape of Good Hope, and across the Atlantic to Boston, thus carrying the American flag for the first time around the world. Meanwhile, Kendrick, in the Washington, made further explorations, and preceded all Europeans in passing through the Strait of Juan de Fuca from one end to the other.

Again, in 1791, was Captain Gray, this time in command of the Columbia, busy exploring the inlets and passages on the north-west coast. In the summer of that year he met with what proved to be a most important success, in finding a great river. This river, in May of the following year, he entered, and for a distance of about twenty miles, carefully explored, bestowing upon it the name of his vessel, which it bears at the present day. The English navigator, Vancouver, had declared after examining the coast, that there was no river in that part of North America. The discovery of the Columbia and its exploration by Gray, contribute the first element in the United States title to the Oregon region. We have the testimony of the British commander, Mackenzie, that from this time, or a period four or five years later, till 1814, the direct trade between the north-west coast of North America and China was almost entirely in the hands of the Americans. These men were called "Yankee adventurers" by the British, for, with "only a few trinkets of little value," they would set out on their voyages. They would "pick up" seal skins, furs, sandal-wood, sharks' fins, and pearls, and with these things and a few dollars, would purchase cargoes of tea, silks, and nankeens, getting home in two or three years.

We now come to the second element in the United States title to the Oregon region. In January, 1803, President Jefferson sent a message to Congress recommending that certain western explorations should be made. The recommendation having been approved, an expedition was planned and the command of it given to captains Lewis and Clarke. These two men were instructed to explore the Missouri river to its sources, and then "to seek and trace to its termination in the Pacific, some stream which might offer the most direct water communication across the continent." Before, however, they set out, the news came that Napoleon had proposed to sell the Louisiana territory to the United States, and then that the sale and cession had been made. Did the "Louisiana Purchase" extend to the Pacific? Who could answer that question better than President Jefferson himself? In a letter to Mr. Breckenridge, under date of Aug. 12, 1803, he says: "The boundaries which I deem not admitting question, are the high lands on the western side of the Mississippi, enclosing all its waters, the Missouri, of course." And, thirteen years later, when he was living in retirement at Monticello, and understood the question in the light that all those years had thrown upon it, he helped to prepare a map of the United States. To the map-maker, Mr. Mellish, he wrote a letter in

which the following language occurs: "On the waters of the Pacific we can find no claim in right of Louisiana. If we claim that country at all it must be "for other reasons." The last link in the chain of other reasons was completed in 1819, as we shall see. As the expedition up the Missouri and thence to the Pacific had been planned without reference to the acquisition of Louisiana, its departure was not delayed because of that acquisition. Lewis and Clarke ascended the river, crossed to the head waters of the Columbia, and, descending that stream for a distance of six hundred miles, in November (1805) reached its mouth. This expedition, says Greenhow, "was an announcement to the world of the intention of the American government to occupy and settle the countries explored, to which certainly no other nation, except Spain, could advance so strong a claim on the ground of discovery or of contiguity."

The third element in the United States title to the Oregon region was furnished in 1811 by a company whose operations were directed by John Jacob Astor, of New York. Where the city of Astoria, in Oregon, now stands, the company built sheds and a large factory. They also constructed and launched a small vessel, and laid out and planted a vegetable garden. We need not relate the particulars of the events of the next few years connected with the history of Astoria, how, during our second war with England, the place fell into the hands of the enemy, and how, after the war, because of a provision in the treaty of Ghent it was restored to us. Our purpose is accomplished when we state, on evidence that was finally admitted by all parties, that the Astor settlement was the first in all the Oregon region.

No negotiations with any power were begun by the United States for the sovereignty of the Oregon region before the year 1818. In that year it was agreed between our government and Great Britain, that all the territory west of the Rocky Mountains, claimed by the United States or Great Britain, "should be free and open to the vessels, citizens, and subjects of both for the space of ten years." It was at no time "asserted by the American government that the United States had a perfect right to that region; it was insisted, however, that their claim was at least good against Great Britain."

We now come to the final element in the United States title to the Oregon region. We have shown what claim Spain gained to the country as far north as the fifty-sixth degree of latitude. That claim, certainly to the largest portion of the territory, was indisputable. In 1819, a treaty, commonly called the Florida treaty, was made between Spain and the United States. By that treaty it was agreed that the southern boundary line of the United States, on the west to the Pacific, should be the forty-second parallel of latitude, the king of Spain "ceding to the United States all his rights, claims, and pretensions, to any territory north of said line." This cession, it is obvious, completed the United States title to the Oregon region. That title, as we have now shown, rests (1st) upon the discoveries and explorations made by Captain Gray; (2d) the explorations conducted by Lewis and Clarke; (3d) the formation of the Astor establishment, and (4th) the title devised from Spain. The treaty made with Great Britain (in 1846) confirmed our right, and left us in quiet possession of the region.

THE SCHOOL-MASTER IN FICTION.

BY J. M. GUINN.

[Anaheim High School, Los Angeles County.]

WHEN compared with the knight of the sword and buckler, the knight of the birch fills but a small space in the pages of fiction. Indeed it would seem from the estimation in which each is held by the novelist, that killing is the more romantic occupation of the two. Nor are the school-masters of fiction a very noble or a lovable race. Many of them are characterizations of all that is mean, malignant, and cruel in human nature. Even the few good school masters portrayed in fiction are more notable for the absence of any very bad qualities than famous for the possession of positive virtues. Whether it is that the average fiction-writer in his boyish days has suffered from the birch of the school-master, and has, in after years, revenged the smarts of his school-boy days by holding up the noble profession and its professors to ridicule, or whether school teaching, more than other occupations brings to the surface the acerbity of a man's temper, and develops the innate meanness in his disposition, are questions I shall not stop to discuss.

Be the causes what they may, novelists have found but little of the heroic in our profession. Nor is this so much to be wondered at. The popular estimate of the heroic in an individual is usually based upon the noise he makes in the world. Sound is one of the chief constituent elements of the popular hero. The heroism of the school-master is a silent heroism. His battles with ignorance are noiseless conflicts. No boom of cannon, no rattle of musketry, no clash of swords resound and reverberate from the battle-fields. No herald proclaims his achievements; no laurel wreath crowns him victor; no triumphal procession celebrates his victories. Not with the din of noisy contest, but with the "still small voice" of persuasion does he win his battles.

Romance, like poetry, flourishes best in fields watered with human blood. The hero of story, like the hero of epic, is too often but a man of blood.

The school-master's vocation is not sanguinary; it is not bellicose. For this reason in the earlier romances we find no trace of the school-master. It is only in the pages of modern fiction that he is introduced. The modern novelist, rising to a broader and nobler comprehension of the true province of fiction, has relegated to obscurity that stock character of the Romance period, the knight of the sword and buckler, a hero whose heroism seemed never to rise higher than the breaking of heads, and the carrying away of unprotected females. In the better class of the modern novel, instead of this hoodlum knight, we have characterizations that personify all the passions; that attack abuses; that preach reforms; characters that are the very embodiment of love, hope, fear, pride, vanity, jealousy, and avarice. Indeed, so broad has become the province of fiction, that theologians, statesmen, and philosophers turning novelist have individualized their pet theories; and have set these fictitious

creations the task of disseminating their favorite hobbies. In the fictitious writings of Scott, Irving, Dickens, Mulock, Bronte, George Eliot, Edward Eggleston, and Dr. Holland the school-master is brought upon the stage of fiction, but even by these, seldom as a leading character. Indeed, by some of these authors he is only brought in as a sort of a minor villain, apparently not having force of character to play the role of leading knave of the story.

If the school-master has been treated cavalierly by the novelist, the school-mistress has fared even worse. In English story she is nearly always of the governess type. An orphan, her back hair in ringlets, and her front hair banded or otherwise distorted, her mild blue eyes usually suffused with tears, treated as a menial by her mistress, snubbed by the young bears whom it is her business to train, and socially ostracised by all, she is the living personification of Patience "sitting on a monument smiling at grief."

She suffers, and grows strong or weak as the fancy takes, until some bright day a hero, fresh from the wars or the China tea trade, returning to the mansion of his ancestors, sees this suffering embodiment of all the virtues, and immediately falls in love with her. After many ripples, eddies, and whirls in the course of their true love, and much opposition "by his uncles, his cousins, and his aunts," she marries the hero and is lost from the noble profession of teaching.

One of the most graphic portraitures of a certain type of the genus school-master of fiction, is that of Ichabod Crane in Irving's "Legend of Sleepy Hollow." Irving describes him as a worthy wight, who "tarried" in Sleepy Hollow for the purpose of instructing the children of the vicinity. "The cognomen of Crane was not inapplicable to his person. He was tall but exceedingly lank, with narrow shoulders, long arms and legs, hands that dangled a mile out of his sleeves, feet that might serve for shovels, and his whole frame hung loosely together. To see him striding along the profile of a hill, on a windy day, with his clothes bagging and fluttering about him, one might have mistaken him for the genius of famine descending upon the earth, or some scare-crow eloped from a corn-field." Of Ichabod's vigorous system of school government; of his methods of teaching; his make-shifts to piece out his scanty income; of his appetite for the marvellous and his implicit belief in the existence of ghosts and witches; of his love for Katherina Van Tassel, or rather, perhaps, his love for old Baltus Van Tassel's broad acres, fat pigs and plump poultry; of his persecution by his rantipole rival Brom Bones; of his rejection by the plump Katherina, and his dark and dismal journey homeward on old Gunpowder, of his meeting with the Headless Horseman of the Hollow and his wild ride with that ghostly galloping Hessian; of all these events in his life, no doubt, my readers are familiar. How in that wild chase, he lost Hans Van Ripper's Sunday saddle, and was nearly cleft asunder on the high ridge of the old horse's back bone; how, when he had reached the bridge where, according to rule, his ghostly pursuer should vanish in a flash of fire and brimstone, instead, to his horror, he saw, as he looked behind him, the goblin rising in its stirrups and in the very act of hurling its head, which through the chase it had carried on the saddle before it, full at him. With a tremendous crash the gob-

lin's head encountered his cranium—he was tumbled headlong into the dust—Gunpowder, the black steed and the ghostly rider passed by like a whirlwind, and Ichabod Crane, the school-master of Sleepy Hollow, was lost to the noble profession of teaching.

Dickens' school-masters are no great honor to the noble profession of teaching. Wackford Squeers of Dotheboy's Hall, "an educator of youth," as he loved to style himself, quits it to serve a seven years' term in a penal colony. Bradley Headstone ends his pedagogical career in murder and suicide. Dr. Blimber is a pompous old pedant who "out Herods Herod" in the murder of the Innocents. McChoakumchild is an evangel of the gospel of monotony and a firm believer in the redemption of the world by the teaching of facts. Constant association with facts has made him cold and frosty. He takes the bloom off the higher mathematics, and all the warmth out of the natural sciences. He always begins his preparatory lessons by congealing the imagination and freezing the fancy out of the little unfortunates who fall into his chilly hands. The only one of Dickens' school-masters who is a credit to the profession is the nameless one who befriends little Nell and her grandfather. Dickens' school-mistresses are an improvement on the masters, yet they fall considerably short of being model female educators. Miss Peecher is altogether too methodical to be lovable. Indeed, we are in doubt whether she is really a little woman or only a mechanical contrivance for putting knowledge into pupils. Miss Blimber is a young lady who has no nonsense about her. "She is dry and sandy from working in the graves of deceased languages. None of your live languages for Miss Blimber. They must be dead—stone-dead—and then Miss Blimber dug them up like a ghoul."

Edward Eggleston, in several of his fictitious works, has graphically portrayed the schools and school-masters of the back country districts in the Western States thirty or forty years ago.

Eggleston is the first novelist of repute, who has made a school-master the chief hero of a story. Ralph Hartsook, the Hoosier school-master, is a marked contrast to the other school-masters in fiction. He is as near perfection as the others are distant from that exalted but rather imaginary state. Ralph tames the young savages of Flat Creek District and becomes the hero of that uninviting region. The opening chapter of the story of the "Hoosier School-master" informs us of the qualifications for teaching most in demand in the good old days of "Lickin' and Larnin'."

"Want to be a school-master do you?" said old Jack Means, the boss trustee of Flat Creek District to Hartsook. "You? Well what would you 'do in Flat Creek District I'd like to know? Why the boys have driv off the last two masters and licked the one afore them like blazes. You might teach school when nothin' but children come. But I 'low it takes a right smart man to be a school-master in Flat Crick in winter. They'd pitch you out of doors, sonny, neck and heels afore Christmas. Howsumdever if you think you kin trust your hide in Flat Crick school-house I haint got no objections. But if you get licked don't come to us. Flat Crick do n't pay no 'nsurance on school-

masters, you bet. Walk into the house, you will hev to board roun' and I reckon you might as well begin with me."

There are other school-masters in fiction as worthy of mention as these I have presented; but time and space forbid their introduction. There is one other that I cannot pass by without brief mention, and that is Mr. Bird of the Bird's Nest in Dr. Holland's "Arthur Bonnycastle." Mr. Bird's methods of teaching, his mode of government, and his noble character are well worthy of study by every teacher.

And now, at the conclusion, some reader of this article may ask, well what has all this to do with teaching?

With methods, and systems, and theories, nothing. With your daily routine of school duties, very little. But is it well for you always to carry about you the chalky atmosphere of the school-room?

Is it well for you to allow your school duties to pencil "pedagogue" indelibly in the lines of your face? Is it well to make life a thing of formulas and demonstrations? Above the real is the ideal. Beyond the world of fact is the world of fancy. Unbend your dignity sometimes. Relax your look of care. Uncurb your fancy and give free rein to your imagination. Cultivate the amenities of life. Be humane, be natural, be manly, be womanly, and then in vain will the novel writer of the future search for Squeers, for Blimbers, and McChoakumchilds in our noble profession.

OBJECTIVE METHODS OF TEACHING GEOMETRY.

BY J. F. KLENCK.

[Prof. Mathematics, San José High School.]

DIRECTIONS.

THE direction of the string of a freely suspended plummet is called vertical; the direction of the surface of a small body of water at rest, horizontal; and any other direction, inclined.

What is the direction of the floor and ceiling of this room? Of the top of this desk? What objects in this room have a vertical direction?

On paper (horizontal plane) the three directions are represented by lines as follows: vertical, from the top exactly downward; horizontal, from the left to the right; inclined, from one of the upper corners toward the one directly opposite.

The difference in direction of a horizontal and vertical line is called a right-angle; but two inclined lines may have the same difference of direction.

If the angle included between two lines is a right angle, such lines are said to be perpendicular to each other. Point out the edges of the cover of your book, which are perpendicular to each other. What edges and faces of the cube have the same difference of direction? etc.

EXERCISES :—1. Draw a horizontal line two inches long, and through its middle point, an inclined line of the same length.

2. Draw a horizontal line three inches long, and through its middle point a vertical line of the same length.

3. Draw a horizontal line two inches long, and erect on the same side at each of its extremities a vertical line one and one-half inches long.

4. Draw a vertical line two inches long, and erect on the same side at each of its extremities a perpendicular of the same length, and draw a straight line between the free ends of the perpendicular. What is the name of this figure?

5. Draw an inclined line one and three-fourths inches long, and on the same side on each of its extremities, erect a perpendicular two and one-half inches long, and join their free ends. How long is the last line? Mention all the lines perpendicular to each other. What is the name of this figure?

6. A side of a square is four feet eight inches long, what is the length of the perimeter (entire boundary)?

7. Measure any two adjacent sides of the cover of your copy book, and calculate its perimeter.

8. Find the perimeter of your school room by measuring two adjacent sides.

The figures required in the above exercise may be constructed mechanically by means of a foot measure, and a wood right-angle triangle, or geometrically as explained in text-books on geometry. It is not necessary to give here the reasons for these operations; the acquirement of skill in construction is at this stage the principal object.

ANGLES.—The difference in the direction of two lines meeting is called an angle. The lines are called the sides of the angle, and the point at which they meet the vertex. As the direction of lines is independent of their length, it follows that the size of an angle is not influenced by the length of the sides.

Let ABC and ABD (figure 1) be two right angles having the sides AB common; it is evident that CB D is a straight line. If we now draw the line EB forming two other angles CBE and EBD , it will be seen that the former is greater than a right angle by the angle ABE and the latter less than a right angle by the same angle ABE , hence the sum of the angles CBE , and EBD is equal to two right angles. If the sum of two angles is equal to two right angles, one of them is called the *supplement* of the

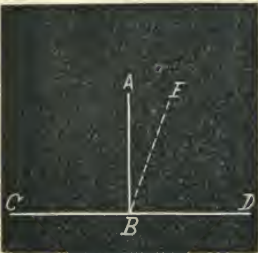


FIG. 1.

other. An angle greater than a right-angle is called obtuse, and one less acute.

Introduction of the table of circular measure and the use of the protractor.

- EXERCISES.—1. Draw an acute angle and its supplement and measure them with the protractor.
2. Draw an obtuse angle and its supplement ; measure.
 3. Draw an angle of 30° , 45° , 60° , 120° ; etc.
 4. Bisect a given angle.
 5. Draw an angle equal to a given acute angle.
 6. Draw an angle equal to a given obtuse angle.
 7. Draw an angle two, three, etc. times as large as a given angle.
 8. Divide an obtuse angle into four equal parts.
 9. Draw three angles having a common vertex, one of 80° , one of 130° , and one of 150° .

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[San Diego County.]

CHAPTER IX—HOBBIES.

WHAT are 'hobbies' Mr. Dean?" inquired Willie White as he pulled off the lid of his dinner pail and sat down by John's side to eat his lunch. "Is n't it something to ride on?"

"He's thinking of hobby-horses, Mr. Dean," said Mark Peters. "You've mixed those children up my boy."

"Well what are hobbies, Mark?" said John.

"Why they are when a body gets sort o' crazy on one thing" said Mark confusedly. "Mr. White's hobby is 'orange trees' just now, and papa's is 'raising grapes,' and—"

"That will do," said John, laughing. "I expect we all have our hobbies, Mark. Let me see. How many hobbies have you boys had this term. First it was ball—morning, noon and recess. Then, base, until you all caught colds from so much running and getting over-heated. Then marbles wore the knees off of your pantaloons, and now jack-stones bids fair to last until school closes. So you see hobbies are ridden by little folks as well as by big.

"Do teachers ride hobbies, too, Mr. Dean," inquired Lucy Peters.

"Yes, indeed," cried Thomas Jefferson. "There is one of Mr. Dean's hobbies, now," and he pointed to Mr. Dean's new house.

"And I think 'hygiene' must be another of Mr. Dean's hobbies," said Ellen Weeks.

"But I mean," explained Lucy, "to ask if teachers have spells at hobbies like the boys have here."

"Certainly they do," replied John. "Their hobbies break out all over the country, just like the measles. The latest one started in Quincy."

"I had the quinsy once," said little Dick Brown, who had been too busily engaged with bread and butter to hear more than John's last sentence. "The doctor said it was quinsy, anyway," he added defiantly, as the rest laughed at his blunder.

"Well, there are lots of people that have the Quincy now, Dick. Newspapers discuss it; principals of schools who can teach the Quincy style are advertised for; and hundreds of institutes listen to the way they do at Quincy, as explained by some leading educator who generally manages to make the teachers understand that he has been using those very methods for some years past."

"Do you use the Quincy methods, Mr. Dean?" inquired Alpha Black.

"Many of my ways resemble theirs if I may judge from what I have read, but no teacher in a small country school should attempt to use the same plans which would be successful in a larger school where the pupils are graded. In this school I try to adapt my teaching to each one of you individually, but in a large school I should have to use one method for the entire class."

"You told us a while ago about the Grube method. I suppose that was the hobby last year, for our teacher had us all saying $1+1=2$, and lots more of such nonsense that I knew when I was a baby," said Alpha.

"She must have caught the disease rather late then," said John, smiling, "for I had that disease many years ago."

"How many hobbies have you had Mr. Dean?" inquired Willie. "Do tell us about them!"

"Yes, please do, Mr. Dean," echoed the others.

Now there are few men who do not delight in talking about themselves before a young and trusting audience, and John Dean was no exception to the general rule. There are few foods to the vanity that are less harmless than the innocent admiration of the young.

"When a person has a hobby," said John, "it displays itself, usually, in one of two ways, viz: collecting what others have made, or making something new. All people like to talk of their hobbies, but while some talk in season and out of season, others only care to talk to those who are interested in the same hobbies which they pursue. Collecting coins was the first hobby I remember, and I ransacked the whole neighborhood for old cents, copper tokens, and such like things. Stray coins with Latin, Spanish, or French words upon them, cost me many an hour of study. I read everything I could find about their manufacture, their value, etc., and though I have sold the most valuable ones, I have a drawer full of old coppers, and not a few silver pieces, to remind me of my first hobby."

"That was the reason you could tell us so much about United States money and English money when we went over it last month, I guess," said Stephen Bennett."

"Perhaps I might have gone into stamp collecting," said John, casting a sly glance at Eben Meeks, who colored a little at this indirect attack, "but stamp-collecting was a much later rage, and I never got in a good place to begin a collection. Scrap-books was my next fancy, and I have some now that I

began when about twelve years old, which I value quite highly. My father had once been a book-binder, and he bound four large books for my scraps, and gave me some valuable hints about sorting my selections and pasting them in properly. I devoted one of my books to geographical items, pictures of places, and descriptions of the different countries written by traveling newspaper correspondents. A certain part of the book was given to each of the six grand divisions, and much of the little geographical learning I now possess, is owing to my scrap-book."

"I mean to begin a scrap-book like that right away," exclaimed Willie White.

"Better wait 'till you get home," suggested Mark.

"My second scrap-book," continued John, "was devoted to stories of animals. Father called it my B book, because the first four parts were devoted to *boys, birds, bees, and bugs*. I am afraid though" added he, "that most of my bugs were beetles, spiders, and various other little animals which we improperly call bugs."

"And did you collect bugs and bird's nests and eggs?" inquired Alpha.

"Not until I became older. Then I made my collections of shells and other things which are in my cases at the house."

"Mother calls them Mr. Dean's *queeriosities*," said Harry Brown, "and she says—" Here he stopped short, and blushing furiously, began to dig a hole in the ground with a sharp stick.

"Well what did she say," urged Thomas. "Tell us what it was. Something about Mr. Dean, I know."

But Harry could not be prevailed upon to tell, for his mother had said that Mr. Dean himself was the biggest curiosity, and he did n't know whether that was complimentary or not.

"My third scrap-book," said John, "was devoted to poetry and funny things."

"I should n't have thought they would have fitted together very well," said Ellen Meeks.

"A pretty appropriate combination" replied John, with mock-gravity. And then remembering that Ellen was somewhat given to poetical attempts, he mercifully refrained from enlarging on the subject.

"The fourth book was worn out long ago, continued John. "I pasted romantic stories in it, and so many people borrowed it, that, leaf by leaf it gradually disappeared, while my books of real information are as good now as when I first filled them."

"Do you think novel-reading wrong?" timidly inquired Lucy Peters, who was extravagantly fond of the New York Ledger.

"O! no. But there are good novels and bad ones. A novel like 'John Halifax,' for instance, makes me the better for reading it; but stories of robbers, and murders, and police reports, whether true or false, are bad things to read or think about."

"I think Mr. Dean must have had a hobby for other books than scrap-books. He has more than I could read in forty years," said Thomas.

"Yes, and my hobbies show in my books if you examine their labels. At first it was poetry until I had nearly a hundred volumes; then it was music. I bought English, Irish, Scotch, Welsh, German, and Italian song-books by the dozen, and took three musical reviews besides."

"I know what the last musical hobby was," exclaimed Mark. "Pinafore.

'I'm called little Buttercup,
Dear little Buttercup,'"

sang he in a not unmusical voice.

"Hush! that was forbidden by a unanimous vote, months ago." shouted Thomas.

"Though I could never tell why,"

sang Alpha.

"It is not hard for anyone to tell what Miss Alpha's hobby is," said John smiling, "since she even sings over her history lesson."

All laughed as they remembered how, a few days before, Alpha had unconsciously hummed a tune while studying her history during the time of school.

"And what hobbies have you had since you began teaching," inquired Willie.

"The first one was arithmetic. That is a man's hobby, I think, for I never knew a school-mistress to make a hobby out of arithmetic. Dear me! How many ways I have tried to teach arithmetic," said John, more to himself than to the others. "First it was rules; then rules were dropped, and everything went by analysis. Reduce-every-thing-to-unity-first was followed by a severe attack of cancellation from which I have never entirely recovered. Then I tried letting every pupil find out his own methods, which was a great success with some pupils, but an utter failure with others."

"Now it is the sign of equality," said Alpha. "Equations, and nothing without $=$ in it through the whole of arithmetic."

"Very true," said John composedly. "The lines of equality are the nails which fasten together the whole structure of mathematics. Algebra has monopolized the equation far too long. I have often heard pupils say, how much easier it was to understand algebra than arithmetic, and when we teachers have a hard example given us, four out of five fly to algebra for relief. Now I do n't believe it is x, y or z that makes algebra the easier study, but it is the equation."

"Some teachers use objects for every step in arithmetic," said Thomas. "I know you use objects, too, but you do n't use them all the time like some teachers do."

"It is a very rare fault to use objects too much in arithmetic," replied John, "yet this is sometimes done. Pupils need to know that there are abstract numbers as well as concrete ones, and it is just as bad to continue to use objects beyond a certain point, as to continue counting on our fingers through the whole of arithmetic."

"That hits you in a tender spot," said Mark, jokingly, to Thomas.

"I'd rather take my fingers to count on than use them for place-marks at the tables," retorted Thomas.

"Did you try as many different ways of teaching other studies, as you did in arithmetic?" asked Ellen Meeks.

"Yes. In geography, for instance, I began by asking the questions just as they came in the book, keeping one finger on the place, and hunting for the answer on the map to see whether the pupil answered my question correctly or not.

"That was the way Miss Smith used to do," said Thomas.

"Then we had outline maps and a globe, and then a fever of map-drawing. Finding some of the children drawing maps on the road, one rainy day, I tried the plan of laying out maps in relief, on the unused part of the play ground, and we built mountains and dug valleys, lakes, and rivers, and cut out bays and peninsulas for most of one term. We even tried to scatter wheat, rice, cotton, etc., over the regions where they grew, but the birds picked up the grains, and the winds blew away the cotton. I really think if I had known more of geography myself, that that plan would have been a great success; but it was a great deal of work, and the patrons called it *pottering*."

"You could n't have built very high mountains, or they would have been too high for the rest of the map," said Alpha.

"Very true," replied John, "that is the great defect of relief maps. The elevations have to be many times higher than they really are, or they would scarcely be noticed. Well, we tried clay maps in the house, but it was near the end of the term and somehow they were not a success, when we count the time they took. That is the great fault of much map-drawing, it takes up too much time for the average pupil to make a success out of it. Then I gradually drifted into the topical method which I now use in connection with the globe and the outline maps."

"But we draw our own outline maps as we need them, and that is map-drawing; and we color the mountains and highlands a different color from the valleys, and that is nearly the same as building them up," said Ellen.

"Very true. Though a teacher may change his methods every term, he retains certain useful portions of the methods he has discarded, and if nothing more, he learns how he should not teach."

"You forget the journeys we take in imagination, from Santos City all over the world, and the stories you tell us of people and animals and products, and—"

"All those are side ornaments and hardly rise to the dignity of methods. You know I tell the little ones many a story in arithmetic about the troublesome pigs that were getting out of one lot and into another while Joe's class was in subtraction, and how much lumber we bought for a fence, and what a hard time we had getting those pigs properly fenced in. But that is only a way to make my real method pleasant. We might, perhaps, call it a piece of a method."

"I do n't believe you ever had grammar for a hobby," said Mark Peters.

"I remember showing you my grammar the first day of school, and telling you that I hated it ; and you said that you did too, and that I had better take the book home, and hide it away somewhere."

"So I did, and we have been studying grammar every day since, Mark. True, we don't parse, and learn all those fine distinctions that are found in grammars, but we learn how to write and speak the English language correctly, and that is grammar. But when I began teaching, I knew Brown's opinions by heart, and made ten year old pupils parse in "Paradise Lost," and did lots of other cruel things in the name of grammar. Then as I read works of philology, I gradually shifted around to the word analysis fever, but I have nearly recovered from that now, though I think a little of it desirable."

"I like to find out what words come from, and hunt up all their sisters, and their cousins, and their aunts," said Mark.

"Spelling was our hobby here three years ago," said Ellen Meeks. "We had spelling twice a day in school, and spelling-school every Friday night ; and it used to be such fun to see the big folks spelled down by some of the school-children. I do love spelling schools."

"The hobby now seems to be against our present spelling," said John. "Whenever the papers mention spelling, it is the reformed spelling they talk of."

"Do you think they will adopt the reformed spelling?" inquired Alpha.

"I hope so. Nearly everybody hopes so. The burden of the work, however, would fall on the printers, and the expense of the change also, so I fear they will fight against the change. I sometimes think it would be a good thing for the teachers in each county to circulate a petition to the county papers asking them to make the changes in spelling that I read to you from the SCHOOL JOURNAL the other day. I am sure we could get almost every one in the county to sign such a petition, and when their patrons all ask for these changes the editors would find it hard to refuse to make them."

"That's a splendid plan," shouted Thomas, excitedly. "Let's write out the petition now, and carry it home for the folks to sign, and then when father visits the schools he can take the petition along with him. He likes to pass around petitions."

And so it was done.

RECITATIONS.

BY AURELIA GRIFFITH.

[Principal Union Primary School, San Francisco.]

RECITATIONS should be both oral and written, and varied as often as possible, to interest the pupils, and prevent both teacher and class falling into grooves of expression and thought. If each teacher who reads THE

PACIFIC SCHOOL AND HOME JOURNAL, would send to the editor an original method of determining the proficiency of each individual pupil, we would possess a more valuable manual of instruction than could possibly be the product of one brain. Desiring to offer my mite toward such a good work, I will describe as well as I can by words alone, an oral exercise that I practiced in a mixed school twenty-seven years ago, and which we find very successful in our fifth-grade, and that might be used even in lower grades to great advantage. For this exercise, it is better to have but fifteen in a division. Supposing there are sixty pupils in a class—divisions A, B, C, and D will be called out separately, but never in regular order, sometimes D will be called first, sometimes B, etc., otherwise they will depend upon hearing the other divisions recite, and neglect to prepare the lesson.

The teacher calls Division C, number one, two, three, etc. When all are in place the pupil at the foot gives a question from the day's lesson to the one next above, and passes it, until it receives a proper answer, calling out "Wrong," until receiving the correct reply, when saying "Right," the pupil takes the place next to the one giving the right answer. If none are able to do so, the one asking the question, answers and passes to the head. Then the pupil left at the foot gives a question. However, none are allowed to take the same question, thereby securing strict attention, until all in the day's lesson have been given. Supposing the one at the head has been able to remain there, he or she will ask a question of the one next below, who, if not able to answer, must allow the question to pass down in regular order until the one answering correctly, goes next to the head. Each pupil must not only be able to ask any or all the questions from a day's lesson, but be prepared to give one from some previous lesson, thereby securing a constant review. Commencing again at the foot, a review question is asked, and in the same way each pupil in turn must give a question of his or her own independent selection from any lesson previously learned.

This exercise, carefully conducted, teaches children to ask as well as to answer questions properly, necessitates a thorough preparation, secures strict attention while reciting, and compels a constant review.

Every written recitation should also be carefully supervised by the teacher. Too many are permitted to pass without any criticism as to method of answering questions, or neatness of execution. One good method is to have the pupils exchange and correct papers under the teacher's direction; then the next day while the class are engaged with some written work from the black-board, the previous day's written lesson is submitted to the teacher, who calls first for the perfect papers, then for one failure, two failures, etc. All failures must be corrected in writing, and the correction presented with or on the paper containing the failure. The correction must also be made orally when the paper is given the teacher, and while she is examining it to see if all the errors have been properly marked and corrected.

During recitations, especially, *be* what you would have the children *become*—*thoroughly thorough*.

EDUCATION AND CRIME.*

BY J. W. REDWAY,

[Fruit Vale, Cal., Feb. 14th, 1880.]

MR. Zach. Montgomery, a member of the California Bar, has lately addressed the public in a pamphlet, the purport of which is to show that State and compulsory systems of education are hot-beds of vice, or as he chooses to term them—POISON FOUNTAINS. In evidence he gives an array of tabulated statistics in which he compares the six New England States with six Southern states, including, however, Delaware. The first six are taken because they represent an organized, or as the author claims, an anti-parental system of education, while the latter are chosen as types of the parental system. Taking no notice of the inconsistency of including among the former six, Massachusetts, whose school and educational interests are the very essence of "parental," I take the liberty to call the attention of all readers to Mr. Montgomery's statistics. They have been selected with care from the most authentic sources, and are altogether very interesting and very valuable tables. Their source being the United States Census Reports, their accuracy will not be questioned.

Briefly summed up, these statistics show the percentages of pauperism, crime, suicide, and insanity are from two to six times as great in the six New England as in the six Southern states. The pamphlet contains also some most sensible views on parental education, and those of a kind which should commend it for perusal to every parent in the State.

This preponderance of crime in the New England States, Mr. Montgomery declares to be the result of their anti-parental school system but, as a matter of fact, he does not give one solitary iota of evidence to bear out his statement.

Now I am willing to admit this preponderance of crime in the New England States, and furthermore to assert that the increase thereof covers the whole territory of the United States, and extends to England and the greater part of Europe. Hence, in view of this, Mr. Montgomery's statistics are remarkable only for their paucity. Furthermore, if he will confer with me, I will supply him with statistics on the sanitary, physical and moral condition of humanity, a thousand fold more frightful than any he has made public. And as it is the intent of this article to show the causes of this race deterioration, which is being manifested in vice, disease, pauperism, and crime, I am thus incidentally brought into collision with Mr. Montgomery's "Drops from the Poison Fountain,"

England and Wales certainly cannot be classed among nations having anti-parental schools and yet crime has increased in that country and her principality in terrible ratio, as the following figures show: In 1805 there

*I am indebted to Mr. Royce's "Race Deterioration" for most of the statistics given in this article.

were 4,605 criminals; in 1815—7,818; in 1825—14,437; in 1835—20,731; in 1845—24,033.

In France, where education is sufficiently "parental" to satisfy the wildest longings of Mr. Montgomery's heart, the record of crime in a population of 36,000,000 stands as follows: For five years ending 1830 there were 178,021 commitments; for five years ending 1835—203,207; for five years ending 1850—221,414. Increase of ratio of commitments for arson alone from 1826 to 1865, 205 per cent.

In the United States, the population of which in 1850 was 19,553,668, there were at the same time 5,646 convicts. In 1870 the population had increased to 33,589,377, and the number of convicts to 32,901. That is to say, while the population was increasing 71 per cent. crime had increased 483 per cent! Pauperism has increased hand in hand with crime, so that in twelve of the states bordering on the Atlantic Ocean there was one pauper to every 265 inhabitants. But in France where there is no "Poison Fountain," there is one to every 112 inhabitants. England, with a population of less than 30,000,000, supported in 1862, 963,200 persons, wholly or in part. In Belgium, with a population of 908,000 families, there were 719,000 living either in abject poverty, or else dependent on charity. It is pertinent here to say that Belgium has a non-producing factory population, packed away at the rate of 256 per square mile.

Insanity, too, has kept pace with pauperism. There were in France, in *public asylums only*—in 1835—10,500 insane; in 1845—17,089; in 1855—24,869; in 1869—38,545, at which date the *total* insane and idiots were 90,684.

In England there were in 1859, 36,762 insane and idiots; 1864—44,797; 1869—53,177; 1874—62,027; 1876—64,916.

The United States has an equally fearful record, and the coefficient of increase is far more disproportionate: In 1839 there were 1,329 insane; 1849—7,029; 1859—13,696; 1869—22,549.

I regret that I am not able to give the statistics in the case of the German Empire. But in view of the fact that, according to the tax roll of Prussia in 1874, 58½ per cent. of the population earned individually less than \$100 per year, it would appear that pauperism is relatively as great in Prussia, at least, as in either of the other countries mentioned.

These statistics show a frightful decay of the moral and physical qualities of humanity, and as the yearly increase is in a geometrical ratio, it is a matter of no little importance to investigate the causes of this terrible deterioration.

I have, in the foregoing tables briefly compared the condition of these leading nations of the world. It is hardly necessary to say that they have no great points of difference in the matter of pauperism and crime. In the United States education is a matter of national importance. Such is its stronghold in the hearts of the people, that any attempt either to cripple it or sectarianize it would be the signal for an uprising. In England, until a recent date, education has been practically out of the reach of any but the wealthy and the well-to-do classes, if the few parochial, charity and sectarian schools be

excepted. In France, education has been thus far in the hands of religious orders, and, with the exception of the government and military schools, wholly under the dominion of the church. In Prussia, education is compulsory and is entirely divorced from any influences save those of the University. And yet education, whether parental, anti-parental, state, or religious, has not turned the tide of crime.

Now it is a well established fact, that crime, insanity, and physical decay, where they are not due to heredity, are almost wholly the results of pauperism ; and furthermore, their ratio to pauperism has a nearly constant coefficient. It is necessary only to consult the history of our own country during the past ten years to demonstrate that any sudden and wide-spread poverty or physical suffering is followed by a speedy increase of crime. It needs but a moment's reflection too to show that the great army of paupers is found in that class of people who are non-producers, and at the same time consumers. To this class belong standing armies in time of peace, laborers having no fixed habitation or specific employment, the thousands of unemployed, and by no means the least, those who have hereditary vagrant and criminal tendencies. It is almost superfluous to add that these classes are not found in agricultural districts, they are found thickly packed and huddled together in the tenement-houses, the Five Points, and the Shinbone Alleys of manufacturing cities and factory towns. They are the people who do not *live*, but drag out an existence in a constant struggle with misery and starvation. They are numbered by the thousands and the tens of thousands in every large city.

From 1860 to 1870 there was in Boston an average of 8,000 working-women constantly unemployed. There were over 12,000 women and girls receiving less than 25 cents per day, and 20,000 men and women working for less than 50 cents per day. There were women with infant children, working for an income that barely paid the rent of a single cheerless, fireless room and an allowance of three or four crackers a day. In New York there were at the same time over 30,000 girls making shirts and drawers at *six cents per garment less the cost of the thread*.* There were wives and mothers operating sewing machines fourteen hours a day for a weekly wages of \$2.50. "These women," says Dr. Lewis, "remain a year or two at the machine, when disease of the spine forces them from the workshop into the street, where they live the best they can, until God in his mercy, makes an end to their misery." That American wives and mothers should ever be brought to this ! Great God, what a comment on civilization and Christianity ! Surely no slave-driver nor Cossack prison-guard could ever devise such fiendish brutality as this.

And yet a reverend gentleman of San Francisco is shocked (!) because crime and immorality are increasing. Can virtue bud and bloom when grafted upon suffering ? or can culture and refinement be the natural sequences of hunger and want ? Put yourself in his place, my dear sir, put yourself in his place, and then perhaps you will cease to wonder why the working classes are deficient in refinement and self-respect.

* The *N. Y. Times* is my authority for this.

But again referring to figures, let us take the State of New York. Here the city population is about one-fourth of that of the country. In 1871 the county poor-house inmates numbered 18,900, while the city poor-houses contained 89,280, or about six in the city to one in the country. Investigate further and we find that the death-rate exceeds the birth-rate. In London this excess is over 10,000 annually. Humanity if living in such places would be wiped out of existence in 400 years. Let us take a still more sweeping view and compare the duration of life, city and country, in the three nations.

AVERAGE LENGTH OF LIFE,	CITY.	COUNTRY.
England.....	27½ years.....	47 years.
France.....	35 years.....	55 years.
United States.....	25 years.....	39 years.

In 1872 the death rate in the city of New York was 42 per thousand ; in the country it was only 22. In the New England States the mortality of infants less than five years of age, amounts to 50 per cent. of the number ; in the country it is 38 per cent. Crowding, want, misery, luxury, effeminacy, vice, crime, poverty and tenement-houses—those hells reeking with cholera, consumption, typhus, idiocy, epilepsy, brain and blood poisons, insanity, drunkenness, debauchery, prostitution and bastardy—these, Mr. Montgomery, and not the public schools, are your “Poison Fountains.”

So long as the drift of population is toward large cities, so long will poverty in both city and country increase. That the movement of population has been toward cities is beyond doubt, and nowhere is it more perceptible than here in California. In 1800, three per cent. of the people of the United States lived in cities, and the remainder in the country. In 1840 the percentage had increased to eight and one-half, and in 1878 to twenty-one per cent. while of course the percentage of country population had fallen to 79.

It is evident, as our farmers and producers are rushing to cities and towns, that the great army of non-producers is increasing and consequently crime and pauperism are increasing. Here is perhaps the chief reason for this alarming race deterioration. Add to this the great curse of legalized gambling—gambling in stock, in railroads, in grain, in bread and meat, in everything that offers a chance for speculation. Add to this the decay of the influence of the Christian religion, which, with all its alleged faults, has ever fostered the spirit of morality and integrity. It is in these causes and not in the public schools that one must look for the beginnings of national decay.

And now turn again to Mr. Montgomery's statistics. Notice that his “anti-parental” results are culled entirely from the nucleus of factory population, from that part of the country thickly studded with manufacturing cities and towns, from the non-agricultural towns, in short from the non-producing consumers.

Why did he not take also Texas, Minnesota, Missouri, Ohio, Michigan or Kansas? These States are highly “anti-parental” in their school systems, but their pauper and hence their crime rate is small. The secret is that these

states have an agricultural population. Their inhabitants are not driven by fierce competition to a slow death within all sorts of hovels, unventilated dens, and charnel houses. Investigate the Census Report a little deeper, Mr. Montgomery, and you will find that crime and pauperism do not mean State education, but on the other hand, they do mean density of non-producing population.

EDITORIAL DEPARTMENT.

SCHOOL LEGISLATION.

AT date of writing, the State School Law has been passed by the Senate, and after amendment gone to the third reading in the Assembly. We expected to publish it in the Official Department this month, but it is not yet ready as we go to press. Some of its principal features have already been referred to in the JOURNAL.

On the whole, it is the most complete and best school-law yet placed on the California statute books, and shows that the confidence of our teachers and superintendents was not misplaced when they entrusted the management of our educational affairs to Frederick M. Campbell.

Three educational bills, of minor importance, were passed since the 1st of March. The first provided for the recognition of all existing certificates. Under this Act, all certificates granted prior to January 1, 1880, are legal until the date of their expiration.

The second Act authorizes county superintendents to issue temporary certificates valid until June 1st of this year. The object of this bill is to prevent the closing of schools by reason of the expiration of the legal certificate held by the teacher.

The third act is supposed to have a local bearing. It is known as the Traylor School Bill, and fixes the salary of teachers in cities of over 100,000 inhabitants. This Act was passed to take the public schools of San Francisco out of politics, and to rebuke the local Board of Education for their unjust and uncalled for action in reducing the salaries of their teachers.

From the very first, public sentiment has set in strongly against the San Francisco Board for their action. The masses of intelligent men of all ranks were opposed to reduction. The Board found apologists only among the enemies of the free schools. Such newspapers as the *Daily Bulletin* and the *Argonaut* abused and misrepresented the teachers and their friends. Ostensibly in the interest of the tax-payers, they advocated the reduction of salaries; in the same interest, they would undoubtedly have justified the wiping out of the entire system.

To superintendent John W. Taylor mainly belongs the great credit of having secured the passage of the Traylor Bill. In this Mr. Taylor has shown himself a clear-headed economist, an honest and true friend of the schools, and a brave man.

It gives us great pleasure here briefly to note Mr. Taylor's record as a public-school man. Even before election, he did not disguise his opinions on school matters, or truckle either to the rabble or to the money-bags who term themselves the aristocracy. In the convention which nominated him, in public meetings before the people, he boldly and explicitly declared himself a high-salary man, determined to keep up the efficiency of our schools by going into the market, and *paying the best price for the best teachers*. On this platform the people elected him, and from it, he has never swerved. And we venture to say that, to-day, the most popular man in San Francisco, is superintendent John W. Taylor.

EDUCATION AND CRIME.

MR. REDWAY of Alameda County, contributes an able article to this number of the JOURNAL, which, in many points, is a complete refutation of a book by Mr. Zach. Montgomery, entitled "Poison Fountains."

While Mr. Redway's article is both interesting and valuable, we are convinced he places too much stress on Mr. Montgomery's facts and figures. Mr. Montgomery's book is designed to prove that "anti-parental education" *i. e.* that given by our public schools, is the source of all the political and social evil in which modern civilization appears so prone to abound.

It is unnecessary to state that Mr. Montgomery is not a philosopher, nor even in that philosophic mental condition which results in the discovery of truth.

When the book appeared, some three years ago, we examined it, found so many evidences of wrong premises, insufficient data, and facts distorted, that we deemed it unworthy of further attention. Oblivion it deserved, and oblivion was its just award.

Mr. Redway in his article gives "Poison Fountains" a momentary glimpse of daylight. It will not be amiss, therefore, to note a few points which he has evidently forgotten. Basing that opinion on the U. S. Census Reports of 1870, there would seem to be an alarming increase in crime, even in those sections we have been led to believe the most cultured and most civilized.

Now we do not believe that civilization has brought with it an increase in crime, statistics to the contrary notwithstanding. Nor do we see that the figures offered to demonstrate such a proposition, are reliable or conclusive. If we compare the state of the world during the last century, as detailed in history and fiction, with the condition of our own day, as we see it in contemporary literature, we can realize the immense strides which our race has made in culture and morality.

We confess our surprise that so flimsy a statement should pass current as that crime has increased faster than population.

In the first place, our records are accurate and exact, those of a generation ago are neither. Thousands of offences against property and life were not recorded a hundred years since, as now they sometimes fail of record in some outlying districts of our country. Insanity, about the undue increase of which so much is said, was as common in the last century as now, only the world heard less of it. Bedlam was a terror, and insanity was reckoned a disgrace and a crime, so that the poor victim was hid and shielded by his family, rather than sent to a living tomb.

In the rural regions of the civilized world, no records of crime were kept; in

fact, punishment was often meted out by the representative of the person injured, and the matter forgotten.

Now, steam and electricity have so closely united the different parts of the earth, that an infringement of the law committed in Maine or Texas, is brought home to every neighborhood in the land, and we feel shocked at the sum total of human depravity.

The trouble with Mr. Montgomery's figures is that, in the hands of a cunning manipulator, they may be made to prove anything. Thus he would have us believe that they show Massachusetts to be a more immoral community than Virginia or Louisiana. Of course, we know, it is not so. But even were it so, we fail to see the connection between his premise and the conclusion he reaches. His style of reasoning would clearly prove the uselessness of any system of education.

We believe there is no occasion for the forebodings of alarmists or the drivings of fanatics. The world is growing better every day. It grows daily more gentle and less brutal; more moral and less hypocritical; more tolerant and less bigoted. And as there has been no other agency at work for three hundred years past than the little metal types and the spread of knowledge among the masses, so we may rationally conclude that to education, the humanizing, enlightening process must be ascribed.

FAITHFUL REPRESENTATIVES.

SIDE by side with Supt. Campbell, the teachers and patrons of our free schools owe a debt of gratitude to senator E. A. Davis of Yuba county and assemblyman Milton Wasson of Ventura county, for their arduous efforts in reorganizing the public school system of this State. The task before them was all work, with apparently none of that opportunity, dear to every legislator's heart, of making a record. They addressed themselves to their duty, and from the beginning of the session, spent all their time in maturing a law, which we may safely pronounce the best ever passed by a California legislature. Nor was their labor ended, when after weeks of earnest work and consultation, they introduced the School Law into their respective houses. Step by step they watched its passage, and only felt a sense of relief when it reached the hands of the Governor.

In the above sentence, no reflection is intended on the present Legislature. On the contrary, we are certain a more honest, faithful, and intelligent set of men never trod the halls of our State Capitol. In both Senate and Assembly some of the most valuable members are former teachers. In the Senate are the president pro tem. George F. Baker of Santa Clara, a former teacher and ex-superintendent; Stephen G. Nye of Alameda, a veteran in the service. In the Assembly are Mr. Du Brutz of Tulare, a courteous gentleman and an able and upright law-maker; ex-superintendent A. P. McCarty of Lake and T. H. Carr of Yuba, both of whom are earnest and unremitting in attention to duty, and who labor with an eye single to the welfare of the people.

As we go to press, the news reaches us that the State School Bill has passed both houses, and has gone to the Governor for his signature.

KINDERGARTEN MATTERS.

IN Wisconsin the Kindergarten System seems to be making substantial progress. From the *New Education*, W. N. Hailmann's paper, published at Milwaukee, we learn that on the 25th of February, the Board of Regents of the State Normal Schools, by a vote of 6 to 3, established a kindergarten in connection with one of the Normal Schools. Oshkosh will probably be selected. Mr. Albee, the principal of the Oshkosh Normal, has for years been a warm advocate of the kindergarten, and under his direction the movement will thrive.

Milwaukee, too, has made a stride forward. The Board of Trustees has, at last, directed the establishment of a kindergarten in connection with the City Normal school. A "skilled and experienced professional kindergartner" is to be employed to take charge of the work under the direction of Miss S. A. Stewart, principal of the Normal School. An appropriation not exceeding \$150 has been made for the purchase of apparatus and other appliances, and the city authorities are to be requested to furnish the necessary room for the purpose in a suitable place.

We believe this would be a good time to do something in the same direction in California. We have among us one of the most devoted and able disciples of Froebel of our generation—we refer to Miss Emma Marwedel of Berkeley—and out of the \$15,000 annually expended for tuition in the State Normal School, we think \$2000 could profitably be expended in securing her services to teach all senior pupils the principles of the "New Education."

We know of no one thing which would do more good, which would better fit young Normal students for good school-room work than an insight into the system of Froebel, and an experimental knowledge of its workings. We feel that in the Normal School there is now a void to be filled, and that Miss Emma Marwedel is just the person to fill it.

A STEP IN THE RIGHT DIRECTION.

WITHOUT any preliminary flourish of trumpets, a school for the practical training of our youth in the mechanic arts is in process of organization at Sacramento, in this State. To Josiah Johnson, a member of the City Council and formerly Superintendent of the Sacramento Valley R. R., the credit is due of the conception and successful inauguration of the enterprise. It is stated that Mrs. Hopkins, widow of the late Mark Hopkins, has greatly aided the undertaking by her liberal contributions.

Mr. Johnson has secured from the City Board of Education, the school building on the corner of Sixth and L streets, containing six large class rooms.

Machinery and apparatus are now being placed, the necessary alterations have already been made, and in a few months the building will be ready for opening.

Mr. James Lick left \$540,000 for the establishment of a School of Mechanic Arts in San Francisco. As all litigation in regard to his will has now been settled, we trust, soon, to see active operations begun, in accordance with his bequest.

At date of writing Assemblyman Wasson of Ventura Co., Chairman of the Assembly Committee on Education, had, after consultation with Superintendent Campbell, introduced the following bill. This is designed to remedy the difficulty of which the State Superintendent speaks in the OFFICIAL DEPARTMENT.

It is entitled "an Act to protect the school districts of this State from injury during the year 1880 by the operation of Section 12 of Article XIII of the Constitution. It provides that no school district shall forfeit or be deprived of its apportionment of State and county school funds which shall fail to maintain a six months' school during the year ending June 30, 1880, by reason of the change requiring the moneys to be derived from poll-taxes to be paid into the State school fund, instead of as heretofore, into the county school fund, Section 1859 of the Political Code to the contrary notwithstanding. It permits the district officers to draw their orders or warrants against the August apportionment of school moneys for the year 1880 to pay teachers' salaries due prior to June 30, 1880, and the County Treasurers are authorized to pay the same, Section 1621 of the Political Code to the contrary notwithstanding. The County Auditors are directed to certify to the Board of Supervisors of their counties the total amount of the warrants issued by them in accordance with Section 2 of this Act, and the Board of Supervisors are directed to add the amount thus certified to the other amounts which shall be found necessary to be raised for county school purposes; also to levy, assess and collect the amount due and pay the same into the County Treasury, which shall be used and expended as other county school funds are used and expended.

RAPID LEGISLATION.

THE bill authorizing county superintendents to grant temporary certificates until June 1st, is an example of very rapid legislation, and also illustrates the zeal and efficiency with which Superintendent Campbell works in the interests of our schools. By his efforts, the bill was introduced in the Senate on Friday, declared a case of urgency, the constitutional provision of reading on three separate days dispensed with, read three times and passed. On Saturday, the same process was gone through with in the Assembly, and the bill went to the Governor who signed it. Saturday night it was printed at the State printing office, and Sunday found it in the mails on the way to the county superintendents.

THE PROCEEDINGS OF THE STATE ASSOCIATION.

WE regret to inform our readers that the proceedings of the last meeting of the State Association of Teachers, will not be published. There has been considerable delay, and we had endeavored to so arrange matters as to bring out the pamphlet by April 1st, but the lack of coöperation on the part of the committee entrusted with the publication, and the fact that but few subscriptions were received for copies, have forced us to abandon the publication. The money already received by us has been refunded.

NORMAL SCHOOL NOTES.

THE Senate Bill apportioning \$150,000 for the rebuilding of the State Normal School at San José, was amended in the Assembly by reducing the appropriation to \$100,000, and the Bill passed. We regret that the whole amount asked for was not allowed. This is no time for a short-sighted economy. As good a building as the one destroyed, is what the cause of education has a right to demand; and this Legislature, which has already shown itself so liberal and progressive in fostering our schools, should not go back on its record.

As we write we hear that the Senate has passed the bill appropriating \$50,000 for a branch Normal School at Los Angeles. This is an eminently wise measure. Los Angeles is 450 miles from San José, and there is every reason to believe that a school there will supply an actual want and prove very successful.

CONCERNING INSTITUTES.

WILL superintendents kindly notify us when they intend to hold their Institutes for 1880?

We are able to supply help in conducting wherever needed. Several well-known teachers and superintendents are willing to attend on timely notice.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

AN ACT TO CONTINUE IN FORCE SCHOOL TEACHERS' CERTIFICATES, STATE EDUCATIONAL DIPLOMAS, AND LIFE DIPLOMAS.

[Approved February 5th, 1880.]

The People of the State of California, represented in Senate and Assembly, do enact as follows:

SECTION 1. All teachers' city and county, county, and State certificates, State educational diplomas, life diplomas, and all other teachers' certificates and diplomas issued in the State of California, under and in pursuance of the laws

thereof, on or before the thirty-first day of December, A. D. eighteen hundred and seventy-nine, shall be and the same are hereby continued in full force and effect, and shall be deemed valid for all purposes and to the full extent of time that the same were and were intended respectively to be under the said laws, on and before the said thirty-first day of December, A. D. eighteen hundred and seventy-nine.

SEC 2. This Act shall take effect from and after its passage.

AN ACT TO CONTINUE IN OPERATION THE PUBLIC SCHOOLS IN THIS STATE.

[Approved March 6th, 1880.]

*The People of the State of California, represented in Senate and Assembly do enact
as follows:*

SECTION 1. The County Superintendent of Schools of each and every county in this State is hereby empowered to issue a temporary certificate to any teacher whose certificate has expired or shall expire between the first day of January, eighteen hundred and eighty, and the first day of June, eighteen hundred and eighty. The certificate so granted shall be of the same grade as the one in place of which it is issued, and shall be valid only until the first meeting of the Board which shall be competent to issue teachers' certificates.

SEC. 2. This Act shall take effect immediately.

A VERY serious question has arisen as to what shall be done to meet the loss to the school funds this year of the poll-taxes to be collected. The case is this. Heretofore the poll-tax has been payable into the county school fund, and has been available for apportionment in June, and was depended upon largely to close up the financial obligations of the school year ending June 30th.

By Section 12 of Article XIII of the New Constitution, the poll-tax is now payable into the State school fund, and is not available for apportionment until August, which is in the next school year. Here is the trouble. The funds of one year cannot be used to pay the indebtedness of the preceding year. No district can share in next year's apportionment which has not maintained a school at least six months this year. And the change in regard to poll-taxes will reduce the funds for maintaining schools very materially.

Several plans have been proposed, and a number of bills drawn and considered by the Committee on Education and the State Superintendent, but insurmountable obstacles have been encountered in each case. The last proposition is to amend Section 1621 of the school law so that no district shall suffer a loss of next year's apportionment, which shall fail to maintain a six

months' school this year by reason of the change in regard to poll-taxes, and Section 1859 so that warrants this year may be drawn against the August apportionment in payment of teachers' salaries rendered prior to June 30th.

THE new school bill--Senate bill 399--as amended by the Assembly passed that body at 3 o'clock to-day, Wednesday, March 30, without one dissenting voice.

THE Senate Committee on Education have agreed with but one dissenting vote--that of Senator Moreland of Sonoma Co.--to recommend the indefinite postponement of Zach. Montgomery's school bill.

NUMEROUS inquiries are made as to when the next teachers' examination will be held. The new school law at first fixed the time for holding examinations in May and November of each year, but was finally amended so that each Board fixes its own time--provided only two examinations shall be held each year. This is as it should be. The conditions being so various in the different counties of the State, it was found impossible to decide upon any fixed time that should be equally convenient to all. Moreover, if a person should fail in one locality, it is not absolutely necessary now that he should wait six months for an opportunity to "try again." He may go to some other county.

THE present Legislature has done nobly in educational matters so far. It is to be hoped that they will round up their record in this respect by first restoring the clerkship to the superintendent's office which the last legislature abolished, and second by placing the deputyship on an equality in point of salary with other deputy State officers--a position which it has never occupied.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

WE learn from *Nature* that Mr. Plantamour has been making some interesting experiments with the spirit-level. He shows quite conclusively that the bubble of very accurately adjusted spirit-levels is constantly moving, indicating a continual gentle rising and falling of the earth's crust.

It is stated that a new photographic process has recently been discovered in Japan. One of the substances employed in the manufacture of Japanese lacquer has the property of becoming almost as hard as stone under the action of light. A slab covered with this material, and duly exposed behind a photographic negative for some twelve hours, was afterward scraped and rubbed with a spatula and brush having the hardened portions raised in low relief, and capable of being used as a block for printing.

At a meeting of the Academy of Sciences held recently in this city, attention was called to a petition to Congress to make the metric system of weights and measures compulsory in the Custom Houses, which the members were invited to sign. Prof. Davidson expressed grave doubts as to the advantages of its adoption, and stated that the expense involved in working the change in this country and England would be very great on account of the immense amount of capital invested in machinery and tools in the great manufactories, which were all adapted to the old system. The expense of the change to the English speaking countries, on this account, would be greater than that incurred by all those nations which had already adopted it put together. He said that the metre was a mere fancy unit, and could not be restored from any process in nature if once lost. The inch had an advantage in this respect, as the standard if lost could be restored by means of the pendulum which vibrated seconds, as its length in inches is known. His arguments were so convincing that no signers were obtained to the petition.

It is announced that Leibnitz's calculating machine has been found. During his stay in Paris, in 1672, Leibnitz invented and constructed this machine, which was the wonder of the time. It can add, subtract, multiply, and divide. It early became the property of the Hanover Public Library, but long since disappeared from its treasures. Nothing was known of its whereabouts, except that it had been sent to an instrument-maker at Göttingen to be repaired. Through the efforts of Dr. Bodmann it again comes into the possession of the Public Library at Hanover.—*Popular Science Monthly*.

FLOATING ISLAND.—Among the many natural curiosities of Tuolumne county, it is not generally known that there is a "floating island." Up in the "Siskiyou," lying like a pearl in the great mountain chain, is Squaw lake, a beautiful sheet of water, now utilized by a mining company as a reservoir. For many years the lake has been a favorite and delightful resort for fishing parties, and contained nearly in its center an island, comprising about an acre of ground covered with a luxuriant grass, and a growth of willow and alder. It was never dreamed that the pretty little island was not terra firma, but when the bulkhead across the outlet of the lake dammed up its waters, the island rose slowly until it had been elevated fully sixteen feet above its original level. It would be a question for the naturalist rather than the geologist to determine the age of this floating island, as it is evidently made up entirely of decayed vegetation. Perhaps at some remote period, the roots of a tree, uprooted by the mountain storm, drifting out in the lake, formed the nucleus from which the island has grown, but it seems singular that it should have remained anchored and unchangeable in its position. The locality is much frequented by pleasure seekers who will hereafter notice the increased elevation.—*Jacksonville Sentinel*.

CALOMEL IN TOMATOES.—An old subscriber and friend writes us that a celebrated French chemist and physician, who has analyzed tomatoes declares that they contain all the elements of calomel, and he has known them to salivate persons. She wishes our opinion on this subject, and we have only to say that this idea has been going the rounds of the press for more than thirty years. It is a falsehood from beginning to end. The idea that they produce salivation may possibly have originated from the fact that, eaten in large quantities by some persons, the acid of the fruit seems to irritate those parts of the mouth with which it comes in contact. The idea that tomatoes cause cancer, is another superstition, the outgrowth of the former notion that tomatoes were unfit to eat. They

cause neither cancer nor salivation, and may be eaten with impunity by most persons, and often with great benefit.—*Herald of Health.*

A TELEPHOTE.—A Chicago *Tribune's* Pittsburg special says: "Application for a patent in connection with a telephote was forwarded by a gentleman of this city. The claim is its ability to transmit physical wave force of light electrically, similar to the transmission of sound by telephone. It is claimed that when the new invention is amply perfected for practical use, it will be possible for one or two persons conversing by telephone to perceive distinctly at the same time the image of the person with whom he is conversing. The practical utility of the invention will be more thoroughly apparent when it is stated that the inventor believes he will be able to transmit from point to point any written or printed documents, for instance, the entire side of a newspaper.

ETCHING ON GLASS.—Etching on glass is performed by laying on the glass a ground of bees-wax, and drawing the design thereon with the needle, as in etching upon copper. Sulphuric acid is then poured on, and fluor-spar sprinkled on it. After four or five hours it is taken off and the work cleaned with oil of turpentine.

A MAGNET CAPABLE OF LIFTING THREE TONS.—Mr. C. Belly, of Indianapolis, has lately made an 800 pound electro-magnet. The two iron cores are four inches thick by 30 inches long, and slide along a yoke 18 inches in length, so as to vary the distance of the poles. The two coils around the two cores consist of eight layers of isolated No. 6 copper wire, and the terminals are so arranged that the electrical current may be sent in various ways. Pole extension for diamagnetism is provided, and the various experiments for which it is adapted are almost numberless. This magnet was made for Prof. Jahn, of one of the schools in Indianapolis.

THE PLANETS IN APRIL.—*Mercury* is a morning star rising on the 10th at 4 h. 18 m.; on the 20th at 4 h. 2 m., and on the last day of the month at 3 h. 32 m. He is near the moon on the 8th, and near Jupiter on the same day, stationary among the stars on the 10th, near Venus on the 15th, near Jupiter the second time this month on the 18th, at his greatest distance from the sun on the 19th, and at his greatest western elongation on the 25th. *Venus* is a morning star rising on the 10th at 4 h. 28 m.; on the 20th at 4 h. 2 m., and on the last day of the month at 4 h. 5 m. She is at her greatest distance from the sun on the 3d, near the moon on the 7th, and near Jupiter on the 16th. *Mars* sets on the 10th at 1 h. 23 m. A. M.; on the 20th at 1 h. 15 m. A. M., and on the last day at 1 h. 10 m. A. M. He is near the moon on the 15th. *Jupiter* is a morning star rising on the 10 at 4 h. 35 m. A. M.; on the 20th at 3 h. 52 m. A. M., and on the last day of the month at 3 h. 10 m. A. M. He is near the moon on the 8th. *Saturn* sets on the 6th at sunset, and from this day till Oct. 18th he sets in daylight. He rises at sunrise on the 16th, and at 3 h. 44 m. A. M. on the last day of the month. He is near the sun on the 8th, and near the moon on the 9th.

Mr. M. H. Gates—DEAR SIR.: A luminous point throws off light-rays in every direction, and an opaque body interposed will produce a clearly defined shadow. Imagine an indefinite number of luminous points so placed that a luminous line is formed, and an opaque body as a pencil be interposed so that the plane of the pencil corresponds with the plane of the luminous line and the sides of the pencil will produce a clearly defined shadow, but the ends of the shadow will be indistinct. Now change the position of the pencil so that it is perpendicular to the plane of the luminous body, and the ends of the shadow will be distinct, and the sides indistinct. Or interpose a square opaque body, and two of the sides will form distinct shadows, while the other two will produce indistinct shadows. If instead of a luminous line we consider a luminous surface which is an infinite number of luminous points, each throwing off light-rays in every direction, thus both the ends and sides of the pencil shadow, or the four sides of the square shadow will be indis-

tinct. We have then produced what are termed in the science of optics the umbra and the penumbra. The sun's rays are not parallel only in the sense that every point on its surface sends forth divergent rays in every direction, and one of these will be parallel [with some one of each of the other points.—[ED. SCIENCE RECORD.]

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

Mr. H. Senger, teacher of Latin and German in the Girls' High School of this city, sends the following, which should elicit some discussion :

$$\begin{array}{r} x^2+y=7 \\ y^2+x=11 \\ \hline x^2+y_2+y+x=18 \quad (1) \\ \hline \left. \begin{array}{l} x^2+y^2=18-(y+x) \\ x^2+y^2=18-s \end{array} \right\} (1)+2) \end{array}$$

Let

$$\begin{array}{r} x+y=s. \quad (2) \\ \hline xy=p \\ \hline x^2+2xy+y^2=s^2 \\ \hline -2xy=-2p \\ \hline x^2+y^2=s^2-2p \quad (3) \end{array}$$

$$\begin{array}{r} \underbrace{\hspace{2em}} \\ 18-s \text{ by (1)} \\ s^2-2p+s=18 \\ p=\frac{s^2+s-9}{2} \end{array}$$

In this function all values of s rendering p *negative* are impossible from the hypothesis ; any value of s making $p=1$ is impossible from the hypothesis ; any value of s making $p > 18-s$ is impossible from the Pythagorean theorem, as p , viz. xy would be $\overset{>}{=} x^2+y^2$ (I).

All values of s from 0 to 3 make p negative.

- 4 render $p=1$
- 6 render $p=12$, which $= 18-s$
- 7 render $p > 12$ or $18-s$

We find, therefore, that in the function $p=\frac{s^2+s-9}{2}$ the values 0, 1, 2, 3, 4, 6, 7, 8... ∞ are impossible, therefore s must be the intergal quantity between 4 and 6, viz. 5.

$$\begin{array}{r} \text{This makes } p=6 ; x^2+y=7 \\ \hline x+y=5 \\ \hline \sqrt{x^2-x+\frac{1}{4}}=\sqrt{2+\frac{1}{4}} \\ x-\frac{1}{2}=\pm\frac{3}{2} \\ x=2 \\ y=3 \end{array}$$

THIRD RULE.—To multiply a number composed of figures each equal to 9, by another whose figures, although equal to each other, are different from 9; for example, 999 by 666.

In this case we say the product will be equal to 665,334.

To obtain this result, we first obtain the product of a figure of the multiplicand by that of the multiplier; the figure of the units of this preliminary product will be the number of the units of the product sought. To the left of the figure of the tens of the said preliminary product, write the figure of the multiplier as many times as there are figures, less one, in either of the two factors; and to its right we place the same number of figures, each equal to the difference between a figure of the multiplicand (9) and a figure of the multiplier (6). To the extreme left of the quantity thus obtained we annex the figure of the unit of the preliminary product; thus we have the product sought. To make this clearer: in the proposed example, 999×666 , the preliminary product will be $9 \times 6 = 54$: so that, to the left of the figure (5) of the tens, we place the figure of the multiplier (6) as many times, less one, as there are figures in either factor, which in this case will be twice ($3-1$), and to its right twice the figure 3 (the difference between 9 and 6), as follows, 66 5 33; and to complete this number we annex to its right the figure (4) of the units of the preliminary product (54). We then have the product sought, 665,334.—*Exchange.*

Considerable interest has been manifested in the discussion of Problem 28, in the last number of the JOURNAL. Mr. C. W. Clements of Ione City inquires if the equations can be solved by the usual quadratic methods. We cheerfully confess our inability to solve them in that manner. We submit a special solution made some years since, in which the possible negative values are not discussed. In answer to the question "What mathematical principle would warrant one in assuming that when the product of two quantities = 0, each of the quantities = 0," we would say that no such principle has been assumed in Master French's solution. "Taking or trying each factor *separately*" is the expression used.

PROBLEM 28.—

$$(1) \quad x^2 + y = 7$$

$$(2) \quad y^2 + x = 11$$

$$(3) \quad x^2 - 4 = 3 - y$$

$$(4) \quad y^2 - 9 = 2 - x$$

From (3) $(x+2)(x-2) = 3-y$, or

$$(2+x)(2-x) = y-3$$

From (4) $(y+3)(y-3) = 2-x$

Whence $(y+3)(2+x)(2-x) = 2-x$.

$2-x$ must equal zero; or $(y+3)(2+x)$ must be 1. In the latter case, $y+3=1$, and $2+x=1$, or $y+3$ and $2+x$ must each be the reciprocal of the other, both of which suppositions are impossible. Hence,

$$2-x=0, \text{ and } x=2.$$

Mr. C. H. Kimball, of Los Angeles has sent a solution of this problem. He would greatly oblige by sending another copy with explanations more in full.

PROBLEM 30.—

$$\text{Solve } \frac{a - \sqrt{a^2 - x^2}}{a + \sqrt{a^2 - x^2}} = b.$$

Mr. Sturges, of Eighth Street Grammar School writes: "The following little arithmetical puzzle I learned when a boy, and as I have never seen it published, I offer it to the juvenile readers of the JOURNAL, as it may furnish them some relief from the famous "15" puzzle."

Arrange in a square, the natural numbers in the square of any odd number, so that the sums of the columns shall be the same whether added horizontally, perpendicularly, or obliquely. For instance, the numbers in the square of 5 may be so arranged that the sum of the columns will be 65; those in the square of 7, so that the sum of the columns will be 175, etc. It is very easily done when *you know how*.

As the time that we devote to the supervision of this department is necessarily quite limited, we must again request correspondents to send solutions, if possible, with their problems. More communications are needed, and are hereby earnestly solicited from all that feel an interest in this department.

NEWS RECORD.

OUR record closes on March 20th.

Foreign and Domestic.

The British Parliament has been dissolved, and writs of election have been issued. Electioneering is now actively in progress throughout the United Kingdom.

The war between Peru and Chile is not yet ended, though the belligerents have not been very active lately.

A rising has occurred in Smyrna.

A decided rupture in Russian and French diplomatic intercourse has occurred.

The Uruguayan House of Representatives has appointed Dr. Francisco Antonio Vedel Constitutional President of the Republic.

An active volcano exists near Brown's Park, Wyoming.

The Southern Pacific Railroad has been completed to Tuscon.

The Panama inter-oceanic canal scheme looks very promising.

Famines like that in Ireland, and some which have been far more serious, have been very frequent of late years. In 1869 absolute starvation destroyed many inhabitants of Finland; in 1871 the well-remembered terrible famine prevailed, or rather commenced, in Northwestern China; Eastern Russia experienced a similar dearth of food in 1873, the result of a great drouth; in consequence of the failure of the rice crop in Bengal in 1874, it is estimated that half a million of lives were lost; since then, in Bulgaria, Cashmere, and Brazil, famine has raged; and now in Ireland, Silesia, and provinces of Persia.—*Harper's Bazar*.

Dennis Kearney and one Gannon, sandlot agitators, have at last had their just deserts meted out to them, for using incendiary language. Judge Rix of the San Francisco Police Court, has condemned each of them to six months' imprisonment in the House of Correction, and a fine of \$1000, the extreme penalty of the law.

George F. Seward, U. S. Minister to China, has been asked to resign.

Personal.

Frank Bret Harte has been promoted from his German consulship to be Consul at Glasgow.

Count Ferdinand De Lesseps, the engineer of the Suez Canal, visited California and spent a week in San Francisco.

The recent death of Mr. James Lenox turns public attention afresh to the Lenox Library, which stands on Fifth Avenue, facing Central Park, and occupying the whole block between Seventieth and Seventy-first streets. This library, which is its founder's most noble monument, is adapted to the wants of special students, the books being the result of many years' collecting by one whose taste and wealth enabled him to purchase the rarest and most unique copies of the world's book market. The value of the building and its contents is estimated at about \$2,000,000, and there is a permanent fund of about \$250,000.—*Harper's Bazar*.

In San Francisco there are now two free kindergartens in active and successful operation, taught by Mrs. Sarah B. Cooper and Miss Katherine Smith. The latter, located in what is known as the 10th Ward, is the older institution, and is firmly established in the affections of the entire neighborhood. The locality is inhabited mainly by the poorer classes, and "Miss Kate" as she is called, is spoken of everywhere as familiarly and affectionately as if she were one of the family.

Educational.

The Congregational Society of the Pacific coast propose to erect an educational institution at Phoenix, A. T., to cost \$10,000.

Joseph Cook says there are three links in the American system of education—the iron, the silver, and the golden. The iron link is the common school, the silver link the high school, and the golden link the college.

The Legislature of Wisconsin (vote of 95 to 1 in the House) have just passed an Act directing the State Superintendent to purchase 600 Webster's Unabridged Diction-

aries to supply that number of its public schools, the other districts being already supplied under previous legislation.

The Empress of Japan has decided to have a college established for young girls who wish to devote themselves to teaching, and has made large contributions for the purpose from her private purse.

Dr. Henry Von Holst, author of the "Constitutional History of the United States," has declined a professorship of constitutional law offered him in the John Hopkins University at Baltimore, with a salary of \$5,000.

Rev. Charles Brooks, father of the State normal schools in America, was asked by a teacher this question: "What shall I teach my pupils?" He answered, "Teach them thoroughly these five things: 1. To live religiously. 2. To think comprehensively. 3. To reckon mathematically. 4. To converse fluently; and 5. To write grammatically. If you successfully teach them these five things, you will nobly have done your duty to your pupils, to their parents, to your country, and to yourself."

The National Educational Association will hold its next annual meeting at Chautauqua, N. Y., beginning the 13th of July. It is thought that the meeting will be a large one.

Dr. Harris has given notice to the School Board of St. Louis, that he will not be a candidate for re-election in May next. This will be a loss to St. Louis, and will be of serious import to the profession throughout America, if he retires from the field of education. During the twelve years of his inspectorial work the pupils of the St. Louis Public Schools have increased in number from 15,000 to 50,000.

No one will be surprised to hear that Mr. Peter Cooper is enlarging the scope of the free schools in the Cooper Union, and is giving his time and money to the work. He exhausted long since the capacity of the public for admiration by his unselfish devotion to the interests of an institution which has been of incalculable benefit to this community. The new feature in the school is to be a polytechnic department. The alterations now making in the Cooper Union and the additional room obtained in other ways will enable three thousand pupils to be accommodated in the entire institution, instead of two thousand as now. When it is remembered that among this great number there are doubtless very few who could have obtained the same instruction at their own expense, we merely begin to realize what the Cooper Union has done and is doing for the intelligent and ambitious poor.—*New York Tribune*.

In Germany and Austria, a system of reformed spelling is ordered to be taught in all the schools of both Empires. The newspapers, likewise, will hereafter use the simplified system. So in one respect, at least, there is merit in an autocratic government.

The meeting of the American Froebel Union is to be at the chapel of the Church of the Incarnation, Madison Avenue, New York, at 10 o'clock on Wednesday, March 31st, to continue three days; Dr. Barnard will preside, and papers and speeches are expected from Wm. T. Harris of St. Louis, Rev. R. H. Newton of New York, Felix Adler of New York, M. A. Newell of Baltimore, and other distinguished persons.

A NATIONAL EDUCATIONAL FUND.—The bill of Senator Hoar, last week introduced into the Senate of the United States, provides that the net proceeds of the public lands and of patents, and all sums repaid to the United States by railroad corporations, either as principal or interest, upon any loans of money, or credit, or bonds loaned to them or paid for their use, or guaranteed for them by the United States, shall be forever set apart for the education of the people. One half of the moneys thus accruing each year is to be invested in four-per-cent. bonds of the United States, and the fund thus created is to be known as the National Educational Fund. One-half of the net proceeds of the public lands, together with the income from this fund, is to be distributed annually, upon certain conditions, among the several states and territories, including the District of Columbia, according to their population between the ages of four and twenty-one years, with the provision that for the first ten years the distribution shall be according to the ratio of the illiteracy of their respective populations, as shown by the last preceding census of the United States.

These provisions contemplate no direct management of education by the General Government. This is left to the states and territories, to be conducted under their own local regulations. All that is proposed is to supply the means in the way of supplementary aid from the sources specified.

The conditions of receiving aid from this fund are these: 1. That the receiving state or territory shall have made provision by law for the free education of all of its children between the ages of six and sixteen years. 2. That it shall have applied all moneys by it received under the law, in accordance with its intention. 3. That it shall make an annual report of its school system, setting forth all the statistics in regard to the same. These conditions being complied with, then each state or territory, including the District of Columbia, is entitled to its appropriate annual appor-

tionment from the fund. Careful provisions are made to guard the fund against any misapplication or perversion to other uses.—*N. Y. Independent.*

The Superintendent of Public Instruction of Kentucky, in his report for 1879, claims that the public school system of that State has made a great advance within the last ten years. Ten years ago it was in an apparently dying condition, "too far gone to complain;" now it has a firmer grasp on the people than ever before, is discussed and forced on attention everywhere. The wealthiest counties are becoming its best friends, and the people are voting to tax themselves to raise a half million dollars a year to supplement the public grant. Eighteen hundred school-houses, most of them tasteful and comfortable, have been built within the last eight years; and a home supply of teachers has been furnished from the best young men and women of the State, who, choosing the business for their life-work, are taking the places of the former temporary teachers. Much of this improvement is due to the energy of State Superintendent Henderson, who retired from office last September. His final report was written for permanent usefulness. Dr. Henderson is now a resident of California, being pastor of a church in San Francisco.

A special meeting of the Department of Superintendence, National Educational Association, was to have been held in Washington, beginning on Thursday, February 19th. At date of writing, no account of the proceedings had yet reached us. Among the speakers and subjects the following were announced:

Dr. Barnas Sears, on The Work of the Peabody Fund; Dr. D. C. Gilman of Baltimore, on University Education; Hon. Wm. H. Ruffner of Virginia, and Hon. Gustavus G. Orr of Georgia, on The Educational Wants of the South; Hon. Thos. A. Bicknell, on the proposed National Council of Educators; Dr. W. T. Harris of St. Louis, on The Census of 1880 on an Educational stand-point; Prof. Butterfield of Boston, on Visible Speech; Hon. J. H. Smart of Indiana, on State Systems of Education; Hon. J. P. Wickersham of Pennsylvania, on The Relations of Education to Crime; Supt. Parker of Quincy, Mass., on The New Departure in the Quincy Schools; Hon. J. D. Philbrick of Boston, on Industrial and Technical Education; C. D. Randall Esq., of Coldwater, Mich., on The Education of Children who are neglected by their Parents; Hon. J. W. Dickinson of Mass., on the High School Question. Supt. M. A. Newell of Maryland is President of the Association for 1880.

The New England *Journal of Education*, assuming that a National Congress of Edu-

cation will be held during the coming summer, suggests that it be composed as follows:

1. Of the State Superintendents of Public Instruction of the several States; or, in case of the inability of any of them to be present, of substitutes appointed by those officers.

2. Of the superintendents of cities whose population shall be equal to 50,000 or more, or of substitutes selected by them.

3. Two or more cities in any State whose aggregate population shall be equal to 50,000 may have one representative, selected by the Superintendents.

4. Each State Association of Teachers shall be entitled to one delegate, to be selected by the Association, with the power to appoint a substitute.

5. Twenty-five delegates at-large may be selected by the joint action of the U. S. Commissioner of Education, and the presidents of the American Institute of Instruction, and National Educational Association.

We suggest that it would be good policy, first, for a few of the acknowledged leaders of educational thought and work in the country to hold a preliminary meeting, and decide what is best to be done in this direction, if anything. The Congress need not be a large body; it must be a strong one. The first steps in constituting it should be taken with great care.—*Pennsylvania School Journal*.

The Governor General of Canada has offered to annually give, during his term of office, a gold and silver medal to students showing the greatest proficiency in modern languages.

Ontario, Canada, has just completed a \$25,000 High School.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SAN FRANCISCO COUNTY.

At their first meeting in March, the Board of Education reconsidered their action in the case of Mr. Ham, suspended for one month, and extended the suspension to a term of six months.

The Board has made its estimate of expenditure for 1880-81 at \$750,000. This the San Francisco *Bulletin* declares a saving of \$240,000, a statement untrue in the first place, as the expenditure for 1879-80 was less than \$880,000; and evidently intended to calm the strong feeling of indignation which pervades the community at the course of the Board. To do justice, however, to our educational managers we will say that they have saved more than a hundred thousand dollars—on the salaries of the hardest-worked, most deserving, and already worst-paid teachers in the department. The *Bulletin* perhaps would now have them go a step further: they can save still more—by abolishing the schools entirely.

The rule requiring the forfeit of one-twentieth of a month's salary for each day's absence, has wisely been rescinded, and the former fraction, one-thirtieth, will hereafter be deducted for each day's absence.

Miss Jean Parker was transferred during the March vacation from the principalship of the Mission Primary School, to the principalship of the Broadway Grammar School. Miss Parker is one of our ablest teachers, and will undoubtedly do well in her new position.

To fill the vacancy in the Mission school, caused by the transfer of Miss Parker, Miss Haswell, an assistant in the Lincoln school was promoted to that principalship. Miss Haswell has long been known as a successful teacher and a cultured lady.

Miss Mullen, teacher of the third-grade in the North Cosmopolitan Grammar School, was elected principal of an Oakland primary school, this month.

The Traylor School Bill, which has just become a law, restores the salaries of the San Francisco teachers to the same rates as before the recent reduction.

Miss H. M. Thompson of the Girls' High School, in this city, is a fortunate legatee in the will of A. Robinson, to the extent of \$5,000.

The Grant Primary School on Tyler street, a twelve-class building, now nearly com-

pleted, is one of the best built and hand-somest school buildings in the State. Its cost was about \$33,000. It is to receive the classes of the Seventh street school of which Miss Emma Stincen is principal. Miss Stincen is one of the most enthusiastic and able primary principals in our city, and deserves her fine new quarters.

ALAMEDA COUNTY.

Prof. Todd, formerly the principal teacher of music in the Oakland schools, was elected City Superintendent at the recent election. This is an excellent choice, as Mr. Todd was for many years a successful teacher, is young and full of energy, and has the respect of the great majority of the Oakland teachers.

Supt. Gilson is actively engaged in visiting the county schools. Two weeks were spent by him in examining the schools of the town of Alameda. Nor is all his time spent in examinations. He has lately been engaged in preparing school cabinets of "raw and manufactured specimens from the vegetable, animal, and mineral kingdoms." These cabinets contain specimens, raw and manufactured, illustrative of the chief commercial and manufacturing industries of the world. In the great labor of preparing lists of the articles for these cabinets, and securing the articles themselves, Mr. Gilson was aided by Mr. J. W. Redway, who is now principal of the Fruit Vale school in this county.

Mr. A. L. Fuller, a well-known and successful teacher, and formerly superintendent of this county, is principal of the Kellogg Grammar School at Berkeley.

LOS ANGELES COUNTY.

Ex-superintendent McDonald returns to the profession of teaching. He has secured the Ranchita school.

Oscar Mack, one of our most energetic young teachers, resigned his position in the Alamos school at the beginning of this year, and intends completing his studies in the Normal School. He is a member of the senior class.

SONOMA COUNTY.

The Mill Creek school-house, in this county, caught fire while the school was in

session, and the building would have been destroyed had it not been for the teacher and a lad about sixteen years of age. The boy gained access to the roof, and the teacher, Miss Bledsoe, passed him several buckets of water, which he applied to the burning shingles, and soon had the fiery element under control and extinguished.

MARIN COUNTY.

The Institute of 1880 has been called for the 20th of April by superintendent Augustine. We anticipate a valuable and interesting session, as Dr. Augustine is thoroughly interested in improving the schools of this county, and the efficiency of its teachers.

SACRAMENTO COUNTY.

The City Board of Education contemplate the adoption of a system of paying their teachers by the year, *i. e.*, dividing the salaries into twelve equal parts. To principal McDonald of the Sacramento Grammar School, is the credit due for securing this just innovation. There is no good reason why this custom should not be adopted everywhere in the State. Under it teachers will be more on a level with those following other professions, will feel more secure in their positions, and will do better because more untrameled work.

The tenth anniversary of Prof. A. H. McDonald's principalship of the Sacramento Grammar School, was celebrated by the pupils and teachers of that school and many of the prominent citizens of that city, last month. After exercises by pupils of the school, Mr. McDonald gave a brief *resumé* of the history of the school since 1870. But two of the sixty-two teachers, at various times associated with him in the school, Miss Mary J. Watson and Miss Sarah J. Weir, have served continuously in the department for over ten years. Of the pupils, 113 are now teaching in different parts of the State. At the conclusion of Mr. McDonald's remarks, the president of the Board of Education, Mr. J. T. Griffiths arose, and in behalf of the assistants of the school, presented him with a handsome set of Pope's Works. Misses Watson and Weir were also presented with similar tokens.

Being called upon and introduced by the

chairman, a large number present made brief addresses, among whom was State superintendent F. M. Campbell.

Senator Grove L. Johnson gave a brief review of the work and success of the Grammar School during the past ten years, and said he hoped that the present superintendent, A. H. McDonald, would be spared and found at the same post at the end of another ten years, which expression was received with unanimous approbation and applause. A similar sentiment prevailed throughout the remarks of other speakers, among whom

were Daniel Brown, ex-superintendent A. C. Hinkson, W. F. Knox, F. A. Hornblower, D. W. Welty, Rev. Dr. Bentley, and superintendent F. L. Landes. A letter from Mr. B. B. Redding, a member of the Board which originally elected Mr. McDonald, was read. The letter was highly complimentary, and expressed the highest appreciation of Mr. McDonald's services as a teacher and worth as a man. Altogether, the occasion was one which must have been exceedingly gratifying to its object.—*Record Union*.

OREGON.

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ASSOCIATES:

R. K. WARREN, Portland. J. T. GREGG, Salem.

All communications and business letters should be addressed to the editor.

MULTNOMAH COUNTY.

PORTLAND.—Nearly 2000 pupils attend the public schools, of which number the High School has 125.

The Bell Telephone has been placed in all the public school buildings. The circuit includes the residence of the City Superintendent, and connection will soon be made with the general office.

The City Institute has been both enjoyable and profitable to the teachers during the present school year. One hour of each session is devoted to elocution, under the direction of Prof. Henderson of the High School.

The new Harrison Street building will be completed in time for occupancy next term. It is to be heated by means of "Harvey's Patent Hot Water Radiators." If this plan of heating proves successful, the Board of Education will order the apparatus placed in all the school buildings next year.

WASHINGTON COUNTY.

Five thousand dollars has been given to the Pacific University, by the Government,

for the education of the Indians. A building has been erected for this purpose, and Capt. M. C. Wilkinson, who is to superintend the matter, is now visiting the various reservations in search of pupils. It is expected that an annual appropriation will be made for the permanent continuation of this school.

MARION COUNTY.

From County Superintendent Gregg we receive the following information concerning the Marion County schools:

There are seventy-six organized school districts in which an average of five months' school is taught. Salary of teachers, averaged, is, males \$43, females \$31.50, paid principally with county and State funds. When these funds are not sufficient to pay the teachers, the balance is made up by subscription or rate bills.

In Salem, the schools are free, supported principally by local taxation. They are regularly graded, and employ eleven teachers and a City Superintendent. There are seven grades requiring one year each, divided into primary, intermediate and

grammar. No high school course. The Willamette University (an excellent institution of learning), located in Salem, provides a high school course, which those who desire can enter after finishing the entire course in the public schools.

Some of the ladies of Salem are moving in the project of establishing a female academy at that place. They are organized and have some able supporters. We await the result.

LANE COUNTY.

There are organized in Lane County, 72 school districts, all of which have from three to six months' school during the year. No. of teachers employed during the year holding first-grade certificates, 69; holding second-grade certificates, 25; number of female teachers employed, 47; male, 47; average monthly salary of female teachers, \$32; of male, \$44.50; number of graded schools, 2; number of teachers in graded schools, 8;

these schools are located at Junction City and Eugene. The public school in Eugene has 310 pupils enrolled; enrolled in High School 40—1 teacher (Prof. Bell); enrolled in Grammar department, 64—1 teacher (female); enrolled in Intermediate and Primary department, 206—4 teachers (female); per cent. average attendance for the past three months, 98 2-10. There is no school district in the county that has any apparatus. The schools in this county have, with a few exceptions, been well conducted, and the attendance of the pupils is good.

The State University, located at this place, has an enrollment of 165; in the University department, 108; in the Preparatory department, 57; the senior or graduating class numbers 19; the apparatus is valued at \$5,000. Some of the best talent in the State is engaged in the teaching. The faculty is composed of five professors and two teachers in the preparatory department.

NEVADA.

HENRY F. BAKER, Editor, Virginia City.

A number of the boards of school trustees in Western Nevada are beginning to appreciate the importance of allowing teachers "visiting days." In Gold Hill three days are allowed annually to each teacher, while four are given in Virginia. On the 5th of March a delegation of twelve teachers from Carson spent the day in inspecting the schools of Virginia. They expressed themselves as having learned as much by their one day's visit as they could from a five day's attendance at an ordinary institute.

The Virginia City Board of Trustees have adopted the half-day system only so far as to affect scholars for the first six months' attendance at school.

A County Institute has been called for April 23d and 24th, by Supt. Young, of Storey. State Superintendent Campbell of California, has been invited to attend.

C. S. Young, of Gold Hill, maintains that arithmetic should be taught by topics; writing by script characters only; oral lessons throughout the course; spelling without a text-book; arithmetic without a text-book for first four years; eight years in geography, four years orally; grammar without a text-book until last year in grammar school; word and phonic method in reading, no reader the first year.

The course of study in Virginia City embraces eleven years' work; that of Gold Hill, twelve years.

The Board of Examiners of Storey county has representatives from the Board of School Trustees from each district.

The School Board of Virginia refused to grant one of the lady teachers permission to open school with prayer.

SANDWICH ISLANDS.

LAHAIWALUNA, H. ISL., }
 March 12th, 1880. }

Mr. Editor.:—I promised you a few items from Hawaii after I reached the beautiful "Islands of the Pacific." No doubt many of your readers have visited these Islands, and to them this article may be of little interest. You have others who may at some future vacation take a trip here, to such a few items may be of interest. You also have those among the readers of your valuable JOURNAL who have had their salaries reduced to such an extent that a car ride will be out of the question during the administration of the present Board of Education. Such poor teachers (poor financially and not "pedagogically"), will have to be content with a pen-picture.

The distance from San Francisco is 2100 miles. We made the trip in less than seven days, but seven days is the usual time. We had a very pleasant voyage, there being nothing to mar the pleasure, or shake up the angry waves. Honolulu, the largest town in the kingdom has about 15,000 inhabitants. The total population of all the islands is 58,500, being distributed as follows: Natives 40,000; half-castes 3,400; Chinese 6,000; Americans 1,500; Britons 1000; other foreigners 6,100. When Capt. Cook discovered these Islands in 1778, he estimated the population to be 400,000. In 1823 the population was 142,000; in 1853 70,000; in 1872 50,000. At the present rate of diminution of the Hawaiian race, they will be numbered among "people of the past," before many decades. The inhabited islands are Hawaii—4,210 square miles; Maui—760 sq. m.; Oahu—600 sq. m.; Kauai—590 sq. m.; Molokai—270 sq. m.; Lauai—150 sq. m.; Niihau—97 sq. m. There are other islands, but they are not inhabited, being wholly destitute of vegetation. Mt. Mauna Kea, on Hawaii is 13,800 feet high, being the highest point of land on the islands. Mauna Loa, on the same island, is 13,600 feet high. The crater Haleakala, on Maui, is 10,000 feet high.

The whole number of pupils in the King-

dom attending school is about 7,000. Total number of schools is 222; of this number, 169 are common schools where the native language only is taught. There are but 19 Government English schools. These 19 schools maintain grades of instruction and discipline far in advance of any of the common or native schools, and they are the popular schools of the Kingdom. The great desire among Hawaiians is to acquire the English language, and these schools furnish the said luxury. The Board of Education have adopted the wise plan of charging a small tuition fee to all pupils entering Government English schools. This is done to enhance in the minds of parents and guardians the value of an English education. The result is a prompter attendance of pupils, as they think, and correctly, "that which costs nothing is worth nothing." Pupils who are not supplied with books and stationery requisite for their use have the same furnished them by the school agent of the district. The school agent informs the tax collector of the district of the names of scholars supplied with books and stationery, and of the amount due from said pupil, and if in the opinion of the agent and tax collector the parent or guardian is able to pay the amount thus expended for books and stationery, the same shall be, and is added to other taxes on the property.

All keepers of coffee, victualing, liquor and billiard saloons, bowling alleys, and also sugar mills, are strictly prohibited to allow any school children (between 6 and 15 years) to remain upon their premises any time between the hours of sunset and sunrise, unless accompanied by their parents or guardians. This keeps children at home evenings, and prevents much crime.

The school with which I am connected is the Lahaiwaluna Seminary. It is on the Island of Maui, and 72 miles from Honolulu. There are four teachers, with an enrollment of 50 pupils. The seminary is for the education of native Hawaiians in the English language. The course of study embraces, besides the elementary branches,

Algebra, Geometry, Trigonometry, Mensuration and Surveying, Bookkeeping, General History, Natural Philosophy, etc. It is the intention of this institution to supply the other schools in the Kingdom with teachers. There is no regular standard of admission (which is a great mistake) into this school. It is however considered that none are to be admitted unless they are acquainted with the elementary branches. The pupils are from all parts of the islands. The Government furnishes school buildings, rooms for the boys, dining hall, land for cultivating taro (*arum esculentum*), the chief diet of the native, and tuition free. The boys do all their work, cultivate the taro, cook, wash their clothes, and keep house generally. The only expenses to the pupil are books, stationery, and clothing. Thus a Hawaiian is able to get a good education at a very small cost. The mind of the native is not very deep, and the memory is very treacherous and short.

A. C. BLOOMER.

Examination Questions*

[For First and Second Grades.]

LANGUAGE.

Time: Ninety Minutes.

1. Write five nouns that form their plurals irregularly. Decline them.

2. Write these sentences in the plural form :

(a) His wife has gone to her daughter-in-law's.

(b) The monkey flourishes in Africa.

(c) Rejoice, O valley !

Re-write the following sentences, changing the gender of the nouns which represent things having life.

(a) My brother has a peacock.

(b) The heroine of this adventure was a girl from our own school.

3. Punctuate this sentence so that it shall tell the truth :

"Every lady in the land
Hath twenty nails upon each hand ;
Five and twenty on fingers and toes ;
That this is true everybody knows."

*Prepared and used by Misses West and Haley, Superintendents, for the graded schools of Knox and Stark counties, Illinois.

4. Compare many, good, bad, little, prettily, up, large, skillful, ill, true.

5. Correct all errors in these sentences:

(a) Richard is taller than me.

(b) There are many men which cannot read.

(c) You and me will go together.

(d) I seen him when he done it.

(e) I and Annie and you have got our lessons.

6. Write a note of invitation to your birthday party. Answer it in the name of the friend to whom you wrote it.

7. Combine these statements into one simple sentence :

(a) I once had a friend.

(b) She was a true friend.

(c) She was a generous friend.

(d) She was a noble-hearted friend.

(e) She was a loving friend.

Express the same fact in a complex sentence. Punctuate both of your sentences.

8. Correct : miss Jones please excuse John For i kept him to home to work respectfully

mrs Brown

9. Parse all the words in this sentence :

"He shall be immortal who liveth until he is stoned by one without fault."

10. Write principal parts of these verbs:

Swim, set, sit, dream, lay, write, do, go, swear, drink.

HISTORY AND GEOGRAPHY.

Time: Ninety Minutes.

1. Describe a journey from your home to the city where the Declaration of Independence was signed. Tell the route you take, the states, cities, rivers, and mountains you pass.

2. Name the thirteen original states in order of their settlement, and give their capitals.

3. Bound the county in which you live, and tell how many townships it contains. Tell for whom it and the adjacent counties are named.

4. Bound Illinois ; name and locate its first settlement, its capital ; the city surrounded by lead mines ; the one where many watches are made, and two named after its early explorers.

5. Bound California, and tell the story of its settlement by Americans.

6. Locate the following places and tell what occurred at each: Lexington, Plymouth, Trenton, Pittsburg, Boston.

7. Tell three important facts about Chicago; three about New York City; three about New Orleans.

8. Name the country from which the Pilgrims came to America; for what is it now noted?

9. How are salt lakes formed? Name and locate the principal one in the United States, and tell three facts about the people who live near it.

10. Tell the story of Paul Revere's ride.

ARITHMETIC.

Time: Two Hours.

Leave your work on the paper. Do not write the answers simply.

1. Knox county has 20 townships; Stark county has 8; how many more acres in one than in the other? How many more acres in a piece of land five miles square than in one containing five square miles.

2. The quotient is 1.06; the divisor 18.75; the remainder, .0046; what is the dividend?

3. How many bushels of oats will a span of horses eat this month if they eat 24 quarts per day?

4. Our school-room is 36 feet long, 30 feet wide, and 18 feet high; how much will it cost to plaster it at 22 cents per square yard, deducting 100 yards for doors and windows?

5. Our coal-house is 12 feet long, 8 feet wide, and 7 feet high; how many bushels of coal will it hold and leave a space of 3 cubic feet at the door.

6. $37\ 5\text{-}6 + 43\ 4\text{-}9 + 57\ 3\text{-}4 + 35\text{-}36 \times 2\ 1\text{-}3 \div 6\ 5\text{-}6 = ?$

7. Bought of John Norton & Co.:

9 yds. French calico, at 25 cents per yard.

6 yds. tape, at 8 cents per yard.

3 yds. muslin, at 14 cents per yard.

26 lbs. yarn, at 28 cents per pound.

Make out bill to yourself and receipt it.

Date it at your home to-day.

8. A boy buys apples at the rate of five for two cents and sells them two for a cent; what per cent. does he make on investment? Give full analysis.

9. On a note of \$2000, dated May 10, 1858, interest 6 per cent., the following indorsements were made: May 10, 1859, \$800; May 10, 1860, \$400; Sept. 10, 1861, \$300; how much was due Jan. 10, 1863?

10. A farmer sold three loads of wheat, the first weighed 3007 lbs., the second 3123 lbs., the third 2996 lbs. Allowing 845 lbs. for the weight of the wagon, how much did he receive for his wheat, at \$1.10 per bushel?

—*The Educational Weekly.*

BOOK NOTICES.

THE NORMAL QUESTION BOOK. Danville, Indiana: J. A. Sherrill. San Francisco: Palmer & Co. 492 pp. Price, \$1.50.

This is an excellent book of questions and answers, designed for the use of teachers preparing for examination. It contains about 3500 questions with answers thereto, on the ordinary subjects of the school course. In addition there are some clearly expressed directions for examinations, some excellent hints on parsing and analysis, and other matter of value to all who intend to pass examination for a teacher's certificate. As there will soon be fifty-two Examining Boards in full blast in this State, each ex-

pecting and fully intending to turn out large batches of schoolmasters and schoolmarmes, we expect to hear of a great demand for this and similar works.

OUR COMMON SCHOOL SYSTEM. By Gail Hamilton. Boston: Estes & Lauriat. 358 pp. Price, \$1.50. For sale by all booksellers.

What Gail Hamilton writes is generally readable and read. This book is no exception. There is much in it that is sensible; and considerable nonsense. Whenever we read anything from her pen, we always realize acutely what an atrocious crime it is to be a man.

In this book, the chapters on teachers' salaries and cram are sensible and trenchantly written, going right to the core of the subject. In the chapter on "Blanks," and the "Supervisory Fever," the author is rather inconsistent and illogical—in a word—slops over. She shows absurdities in the way of "school blanks," and gives examples of superintendents and principals who are obviously unfit for their positions, but we fail to see wherein such *abuses* show the evil of the system.

Coming from one who is evidently friendly to a scheme of free popular education, and who has some experimental knowledge of her subject, the book is worthy a more extended criticism than our space now permits. In the meanwhile, we can recommend it to teachers, as a work wherein will be found clearly portrayed, many faults and shortcomings, which to know may be to avoid.

FIRST PRINCIPLES OF POLITICAL ECONOMY.

By A. L. Chapin, President of Beloit College. New York: Sheldon & Co. 225 pp. Price, sample copy, 25 cents. For introduction, 48 cents.

We have already suggested in these columns, the prime necessity of some course in the elements of Political Economy for our high schools and advanced grades. One difficulty appears to be in obtaining some text-book sufficiently elementary in character and concise in treatment, to admit of its admission into our course of study. Such a book is the one before us. President Chapin, a year ago, brought out a revision of Dr. Wayland's "Elements of Political Economy," with great success. With this book as a basis, he has given us a clear and concise treatise on the principles of the science.

The subjects which have a prominent place in the work are the "Relations of Capital and Labor," "The Distribution of Profits," "The Principle and Usages of Taxation," "The Functions of Money and Credit," "The Uses of Banks," and the "Demands of Modern Civilization for more Free International Trade." These are treated in a broad and comprehensive spirit, and with no view of fostering party or faction. Superintendents and teachers will find this book repay examination.

THE UNITED STATES READER. Embracing selections from eminent American historians, statesmen, and poets, with explanatory observations, notes, etc. By John J. Anderson, Ph. D. New York: Clark & Maynard.

Prof. Anderson's historical text-books are decidedly coming to the front. He undoubtedly stands to-day without a peer as a school historian.

This book from his pen is not only a reader, but a complete history of our country, and not only a history but a valuable compendium of American literature. Some of the ablest writers of our land, eighty we ascertain from the table of contents, furnish us, in poetry as well as in prose, with a continuous narrative of our history.

The first selection, a poem, by Joanna Baillie, entitled "First Voyage of Columbus," is followed by the "Landing of Columbus" by Robertson, and Prescott's "Maritime Enterprise in the 15th Century." The closing is "The Centennial Hymn" by Whittier, "Through Storm and Calm" by Bryant, "Chicago" by Whittier, and "The Future of the Republic" by Story. These selections will give some idea of the character of the contents and the manner in which Dr. Anderson carries out his idea.

As our school course is, at present, organized, it seems almost hopeless to find a place for this book. Were we in Quincy, we could easily see that by using it, two birds, *i. e.* Reading and History, could be killed with one stone. The first-grades of all grammar schools and all advanced grades in district schools could use the book to advantage. Not only would it give a good idea of our country's history, and a fair acquaintance with our literature, but it would inculcate a love of country, one of the most to-be-desired results of school training.

SIX STORIES FROM THE ARABIAN NIGHTS.

Edited by Samuel Eliot, superintendent of the Public Schools of Boston. 210 pp. Price 60 cents. Also by Dr. Eliot, POETRY FOR CHILDREN. 327 pp. Price \$1.00. Boston: Lee & Shepard. San Francisco: Samuel Carson, 120 Sutter St. For sale by all booksellers.

Last month, we reviewed, with real pleasure, an "Arithmetic for Beginners" from this house. We then expressed the opinion, which we here repeat, that not only is there a place for this book in the lowest grades of our primary course, but that its use can not but lead to the most beneficial results.

The books before us belong to the same class: in every schoolroom where they are placed, the hour for the reading lesson will be hailed with delight. They are not intended to supplant the regular reading book, but to supplement its teachings. The stories are all carefully and judiciously chosen, are printed in large, clear type, and well-illustrated. The style is simple, but the vocabulary is sufficiently extensive to give the learner a reasonable store of English words. The book of poetry is a casket of little gems. We meet scores of the familiar friends of childhood's days, and time has deprived none of them of their well-remembered charms. This kind of literature seems to us well adapted to the mental ca-

capacity of children in the higher primary and lower grammar grades. It is evidently all selected with a good purpose, and that no less than to cultivate a taste for farther reading of pure, healthy literature. Teachers in ungraded, as well as in graded schools, will find these books very serviceable. Let a story or a poem be read by the different pupils of a class, and then let them write out from memory and in their own words, a brief synopsis of what was read. This will form a useful exercise in language.

OLNEY'S PRACTICAL ARITHMETIC. Parts I and II. New York: Sheldon & Co.

Among all the arithmetics recently issued, we know of none more adapted for efficient work than the books before us. Prof. Olney's reputation as a mathematician and author of school books, is almost worldwide. These books sustain his rank. They are brief and practical. WORK is the principle underlying their construction. The explanations are very brief and clear. The Metric system is introduced, well presented, with many examples before Percentage.

One thing we miss in these books, *i. e.* oral exercises before written work. We do not believe in the usual "Mental" or "Intellectual Arithmetic," but hold that all principles and rules should be exemplified by simple examples, to be performed orally, before written work is taken up. With this exception, we like these books much.

GRADED PROBLEMS IN ARITHMETIC AND MENSURATION. By S. Mecutchen, A. M. Philadelphia: J. H. Butler & Co. San Francisco: A. L. Bancroft & Co. 232 pp.

This, as the name implies, is a book of examples, covering the entire grammar school course in Arithmetic. There are 3500 questions, well arranged, practical, and accompanied by the necessary rules and tables briefly stated. The answers are given in the back. The book may be used with any series of arithmetics; and will undoubtedly be found an invaluable aid to every live teacher.

LITERARY NOTES.

Among the many interesting features in the April *St. Nicholas* are an illustrated account of a boy's "Adventure on an Egg-Var," in rescuing his baby sister from an eagle. There are five other complete short stories, all illustrated, telling of the brave act of a little country girl; sheep lost and found in New England snows; a poor child's short experience of high life; a curious episode in the life of the first Bonaparte; and the sad fate of a "Vacillating Bear." There is, also, an illustrated account of the exciting Mexican and Cuban game of "Kite-Cutting," besides a description, with six pictures, of the beautiful "Dead City," Pompeii, and a story, with full-page illustration, of how they used to celebrate

"Easter in Rome." Miss Alcott's serial, "Jack and Jill," takes its boys through an exciting debate, and its girls into a grand tableau; and Mr. Stoddard's "Among the Lakes," comes to a close with a long installment full of fun and movement.

The April *Scribner* is even more beautiful than usual in the way of illustration. Among the contributions, as of especial interest, we will name "Success with Small Fruits;" the third part of "Louisiana;" Eugene Schuyler's "Peter the Great;" "The Grandissimes;" and "The Growth of Wood-Cut Printing," by Theodore L. DeVinne. There is also a touching poem, "Fra Luigi's Marriage," and some pleasing short stories.

The publishers of *Scribner's Monthly* offer for 1880, three premiums of \$100, \$75, and \$50 respectively to pupils in any art school or under any private teacher, for the best work in art engraving. The board of judges are Mr. Alexander W. Drake, superintendent of the department of illustration in *Scribner's Monthly* and *St. Nicholas*, Mr. Timothy Cole, a practical engraver of first rank, and Mr. Theodore De Vinne, who is probably the best printer of wood-engravings in the United States.

In *Appleton's Journal* for April, we have in addition to the conclusion of "The Seamy Side," and another section of "The return of the Princess," a history of "The Suez Canal," which is likely to arouse great interest just at this moment, "Health at Home" by Dr. B. W. Richardson of London, and other articles of scarcely less interest.

The April *Harper* is more remarkable for the beauty of its illustrations than for any special ability in its articles, not that the latter are either tame or mediocre; *Harper* can never be that. Wm. Black's story, "White Wings," and Blackmore's "Mary Anerley" are both very interesting. "Music and Musicians in England" by Mrs. John Lillie, "La Villa De Santa Fe" by Ernest Ingersoll, "Home Studies in Nature" by Mary Treat, and "The Swiss Rhine" by S. H. M. Byers, are some of the principal articles in this number.

Lippincott's for April contains several articles of live interest, in addition to its usual variety of standard fiction in the shape of short stories, and the pleasing serial "Adam and Eve." The first is Dr. Felix Oswald's "Summerland Sketches, No. X;" "The American Pompeii." We then have "Three Lakes of Central New York," by F. H. Taylor; "A Phase of Life in Florida" by Mrs. Mary Treat; and "Concerning Animalcules" by Dr. R. Osgood Mason.

Of the *Popular Science Monthly* it may truly be said that it is without a rival and without a peer. The April number opens with an elaborate criticism of Henry George's great book, "Progress and Poverty." The writer, Mr. C. M. Lunran, agrees substantially with Mr. George's views. "What is Jupiter Doing," is an article describing a recent extraordinary outbreak on that planet. Some of the other subjects discussed in this number are "The Scientific Aspects of Free Will" by Dr. A. J. Leffingwell, "Experimental Legislation" by Prof. W. S. Jevons, and "The Crayfish" by Prof. E. Ray Lankester.

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No. 5

CAUSES OF ANOMALOUS DISTRIBUTION OF
RAIN ON THE PACIFIC COAST.

BY PRESIDENT JOHN LE CONTE, LL. D.

[University of California.]

IT is evident that these seeming anomalies in the distribution of the rainfall on the Pacific Coast, must be due to the operation of peculiar physical causes which are immensely active in this region of the globe. It seems to me that nearly all of them may be satisfactorily explained by means of the fundamental principles previously enunciated, viz : (1) The temperature of the adjacent ocean, which determines the tension of the aqueous vapors contained in the air resting on it. (2) The direction of the prevailing vapor-bearing winds which waft the moisture to places of condensation or otherwise. (3) The temperature of the contiguous lands, which renders them efficient agents of condensation or the opposite.

TEMPERATURE OF THE OCEAN.—(a) WARM OCEAN NORTH OF LATITUDE 41°.—The great north equatorial oceanic current flows westward from the American Continent, until it is arrested by the coasts of Asia and Australia, where it divides, and the north branch reaching the Philippine Islands and Formosa, is deflected to the northeast and becomes the Japanese Current *Kuro-Siwo* (or *Kuro-Suro*), the Gulf-stream of the Pacific. This vast body of warm water

flows swiftly along the eastern coast of Japan, and, continuing its north-eastern course across the North Pacific Ocean, reaches the Peninsula of Alaska. Here it divides, a smaller portion flowing northward, while the larger portion is deflected southward, and glides along the coasts of British Columbia, Washington Territory, Oregon, California, and a portion of Lower California north of Cape St. Lucas, obeying the tendency impressed by the rotation of the earth upon its axis, it leaves the western coast of North America, and turns westward, to re-enter the grand equatorial current, and thus complete the cycle of oceanic circulation. In fact, the North Equatorial, the Japanese, and the North Pacific currents seem to form one immense whirlpool in the North Pacific Ocean. This noble oceanic stream of warm water, although very much reduced in temperature in its long voyage from the coasts of Japan to Alaska, retains enough heat to impart to the waters of the Pacific Ocean north of 41° , an abnormal warmth; that is, a temperature much above that due to the latitude. Whilst our existing knowledge enables us thus to outline the general course of this oceanic current which bears inter-tropic warmth to high northern latitudes, yet, much information is lacking in relation to many important points. What are the exact boundaries of the stream? What are its off-shoots or branches? What are the surface-temperatures at various points in its course? What is the distribution of temperature in relation to depth? These and a great many other interesting physical questions, will, doubtless, be answered, as soon as our Coast Survey has had time to carry out the line of investigations which has been so intelligently inaugurated. We shall then be in possession of as accurate physical data in regard to the Gulf Stream of the Pacific, as we now have in relation to the Gulf Stream of the Atlantic.

(b.) COOL OCEAN SOUTH OF LATITUDE 41° .—It seems to be now quite satisfactorily established by the investigations of Prof. George Davidson, in connection with the operations of the U. S. Coast Survey on the Pacific Coast, that, throughout the year, there is a narrow, cool, counter or eddy current, moving steadily to the northward, between the shore-line and the *Kuro-Siwo*. Sometimes this is not more than a mile or two wide, "at other times, after a week of calm summer weather, it becomes as much as fifteen miles wide, even off Cape Mendocino." In the present state of our knowledge, it is difficult to assign an origin to this cool counter current, and it is still more difficult to explain the remarkable coolness of the ocean south of Cape Mendocino. The idea of Arctic currents is out of the question, for the polar currents are almost entirely absent in the North Pacific Ocean, owing to the great shallowness and narrowness of Behrings Strait, which is the only passage open to them. Is it not probable that a sub-marine cold current originating in the Sea of Kamtchatka, might find its way under the *Kuro-Siwo*, and come to the surface near latitude 41° ? But, in the absence of data, it is useless to conjecture. In the meantime we recognize the fact that south of Cape Mendocino, the surface-waters of the Pacific Ocean are abnormally cool.

(2.) DIRECTION OF THE VAPOR-BEARING WINDS.—It is well known that the great thermal agencies emanating from the sun, which keep up the grand cycle of atmospheric circulation, must tend to produce west winds along the whole

Pacific coast north of the Tropic of Cancer. But the action of these general causes is somewhat modified by the peculiar physical conditions existing along this coast. The great excess of temperature in summer of the interior valleys over the coast, imparts to the winds of the coast at this season of the year the features of monsoons; that is, there is an indraught of air from the cool ocean towards the hot area of the land.

(3.) HIGH SUMMER TEMPERATURE IN THE GREAT VALLEYS.—There is no other country in the world where the temperature of the summer increases as much as we go from the coast to the interior, as on the Pacific Slope of North America from Alaska to Lower California. The great valleys lying between the Sierra Nevada and Cascade mountains, and the Coast Ranges—being more or less protected from the cooling influences of the summer winds which sweep the air from the comparatively cold ocean—seem to become great reservoirs of heat during this season, when their sloping sides are most exposed to insolation. The mean summer temperature in the central part of the San Joaquin valley rises above 84° (F.) The following table will illustrate this point :

INTERIOR.			COAST.		
<i>Station.</i>	<i>Latitude.</i>	<i>Mean Sum'r Temperature</i>	<i>Station.</i>	<i>Latitude.</i>	<i>Mean Sum'r Temperature.</i>
Ft. Yuma.....	32° 46'	92.07° (F)	San Diego.....	32° 42'	69.67° (F.)
Camp Cady.....	34 58	89.98 "	Monterey.....	36 37	59.73 "
Visalia.....	36 22	80.78 "	Ft. Humboldt...	40 45	58.15 "
Ft. Miller.....	37 00	85.70 "			
Ft. Reading.....	40 28	80.27 "			

APPLICATION TO COAST CLIMATE.—The existence of a comparatively warm ocean surface north of latitude 41°, and of a comparatively cool ocean surface south of the same parallel of latitude, combined with the direction of the prevailing winds serve to explain the peculiar and most remarkable features of the coast climate of the Pacific Slope: For, between the coast ranges and the seashore, the thermal element of climate is governed by the temperature of the adjacent ocean. It is not necessary to assume that the waters of the coast of Oregon are absolutely warmer than those off the Golden Gate; for it is simply a question whether in the respective latitudes the temperature of the surface-waters of the ocean is higher or lower than that due normal distribution of solar heat on the globe;—in other terms, whether the ocean is abnormally warm in latitude 47°, and abnormally cool in latitude 37°. Thermometric observations on the surface-waters of the Pacific Ocean along the northern portions of the coast sufficiently remote from the shore-line to escape the influence of the narrow cool current, and, at the same time, to be under the full dominion of the *Kuro-Siwo* current—are still great desideratums.

According to the observations made in connection with the operations of the Coast Survey, the surface temperatures of the ocean waters are as follows:

Off the Golden Gate in winter months—53° (F.); off the Golden Gate in summer months—58° (F.); off mouth of Columbia river in winter months—50° (F.); off mouth of Columbia river in summer months—60° (F.)

(1.) UNIFORMITY OF TEMPERATURE ALONG THE COAST.—The remarkable uniformity of the distribution of temperature along the Pacific coast, is exhibited by the fact that the isotherm of 62° (F.) instead of running along the parallel of latitude, actually skirts along the coast in a northern direction for about 650 miles, between San Francisco and the northwest part of Washington Territory. The same feature is indicated by the directions of the winter isotherms approximating to parallelism with the line of the coast. The same is true of the summer isotherm of 60° (F.)

Outside of the Golden Gate, the oceanic waters have a temperature of from 53° to 58° (F.) the year round. The presence of this comparatively cool ocean, together with prevailing westerly winds, sweeping the air which had been resting over the sea upon the adjacent land, impresses the chief character on the climate of this coast. The characters thus impressed upon the climate of the Pacific coast are as follows :

(a.) A comparatively high and uniformly distributed winter temperature, which is felt far in the interior of the continent, through the influence of the vast amount of latent heat carried by the vapor-laden winds during the rainy season.

(b.) We are impressed with the comparatively low summer temperature along the Pacific coast, and west of the Coast Ranges ; but this does not penetrate far into the interior. Indeed, the coldest place in the whole United States during the mid-summer (excepting high mountain ranges and peaks), is just outside the Golden Gate, where we encounter the summer isotherm of 56° (F.), which appears nowhere else during this season. With this low summer temperature is associated little or no precipitation of moisture.

The contrast with the Atlantic coast is most striking. There, we have near the mouth of the Chesapeake Bay, in the corresponding latitude with San Francisco, a summer temperature higher by as much as 18° (F.) In winter this contrast between the two coasts is of an opposite kind ; the winter isotherm of 52° (F.) off the Golden Gate, corresponding to the winter isotherm of 42° (F.) off the mouth of the Chesapeake. Finally, we notice the extraordinary difference in the range of the mean temperature of the extreme seasons ; this being about 4° (F.) on the Pacific, and nearly 33° (F.) on the Atlantic.

(c.) We have already noticed the great accumulation of heat during summer in the valleys lying east of the Coast Ranges. During this season, the indraught of air from the ocean to the hot interior carries with it a deluge of cool atmosphere, of nearly the same temperature as the water over which it has passed, which is poured in upon the adjacent land. As it approaches the shore, the slightly higher tension of the vapors, resting upon the shallow waters and moist land (due to the more efficient solar action upon this shore-belt), produces condensation of vapors when the cool aerial wave from the Pacific Ocean comes in from the west. Hence, almost daily, during the summer, soon after mid-day, huge masses of dense fog-clouds come rolling in from the sea upon the shore, which deposit some of their moisture on the foot-hills and the slopes of the contiguous highlands : But these fog-clouds are completely dissipated before reaching the hot sunny valleys of the interior.

Between the sea-coast and the interior valleys there is a region of country under the combined influence of the climate of the coast, and that of the great valleys, and, consequently, enjoying a most delightful climate. Many of the small valleys surrounding the bay of San Francisco, and penetrating into the interior, as those of Santa Clara and Napa, enjoy these advantages. The sea-winds, with their fog-clouds and abundant moisture, prevent these valleys from being parched with drouth during the rainless season, temper the fierceness of the summer heat, and moderate the cold of winter.

DISCOVERY OF THE BAY OF SAN FRANCISCO.

BY RICHARD EDWARD WHITE.

PADRE Junipero Serra
 Slowly read the King's commands,
 In relation to the missions
 To be built in heathen lands.
 And he said: "The good Saint Francis
 Surely has some little claim,
 Yet I find that here no mission
 Is assigned unto his name."

Marquis de la Croix made answer:
 "If the holy Francis care
 For a mission to his honor
 Surely he will lead you there.
 And it may be by the harbor
 That the Indian legends say
 Lies by greenest hills surrounded
 To the north of Monterey."

Said the Padre Junipero:
 "Marquis, though I can not tell
 Of the truth of Indian legends,
 Yet of this I know full well—
 If there be such hidden harbor,
 And our hope and trust we place
 In the care of good Saint Francis,
 He will guide us to the place."

Soon, Don Jasper de Portala
 Started northward, on his way
 Overland, to rediscover
 The lost port of Monterey.
 Since the time within its waters
 Viscaino anchor cast,
 It remained unknown to Spaniards,
 Though a century had passed.

On his journey went Portala
 With his band of pioneers,
 Padres, Indian guides and soldiers,
 And a train of muleteers;
 And said Serra, as he blessed them,
 As he wished them all Godspeed:
 "Trust St. Francis—he will guide you
 In your direst hour of need."

On his journey went Portala
 Till he reached the crescent bay;
 But he dreamed not he was gazing
 On the wished-for Monterey.
 So a cross on shore he planted,
 And the ground about he blessed,
 Then, with all his brave companions,
 Northward went he on his quest.

On his journey went Portala
 And his army northward on,
 And methinks I see them marching,
 Or in camp, when day was done;
 Or at night when stars were twinkling,
 As that travel-weary band
 By the log-fire's light would gather,
 Telling of their far-off land.

And they told weird Indian legends,
 Tales of Cortes, too, they told,
 And of peaceful reign of Incas,
 And of Montezuma's gold;
 And they sang, as weary exiles
 Sing of home and vanished years,
 Sweet, heart-treasured songs that always
 Bring the dumb applause of tears.

When the day was sunk in ocean,
 And the land around was dim,
 On the tranquil air of midnight
 Rose the sweet Franciscan hymn ;
 And when bugle told the dawning,
 And the matin prayers were done,
 On his journey went Portala
 And his army northward on.

Far away they saw sierras,
 Clothed with an eternal spring,
 While at times the mighty ocean
 In their path her spray would fling ;
 On amid such scenes they journeyed,
 Through the dreary waste of sand,
 Through ravines dark, deep, and narrow,
 And through canons wild and grand.

And with what a thrill of pleasure,
 All their toils and dangers through,
 Gazed they on this scene of beauty
 When it burst upon their view,
 As Portala and his army,
 Standing where I stand to-day,
 Saw before them spread in beauty
 Green-clad hills and noble bay.

Then Don Jasper de Portala
 Broke the spell of silence thus :
 "To this place through Padre Serra
 Hath Saint Francis guided us,
 So the bay and all around it
 For the Spanish King I claim,
 And forever, in the future,
 Let it bear Saint Francis' name."

Then he spoke—and I am standing
 On the self-same spot to-day,
 And my eyes rest on the landscape,
 And the green hills, and the bay,
 And upon Saint Francis' city,
 As, with youth and hope elate,
 She is gazing toward the ocean,
 Sitting by the Golden Gate.

Needless were such gifts as heaven
 Gave to holy seers of yore,
 To foretell the meed of glory,
 Fairest town, for thee in store !
 To foretell the seat of empire
 Here to be, no distant day,
 Where Balboa's sea doth mingle
 With the waters of thy bay !

—*The Californian.*

LANGUAGE TEACHING.

BY J. B. MCHESNEY.

[Principal Oakland High School.]

THERE is no branch of study pursued in our schools in which there is a greater discrepancy between the labor performed by both teachers and pupils, and the results obtained than there is in English Grammar. Insufficient and unsatisfactory results are probably approximated more nearly in reading than in any other study ; but, taking everything into consideration, the toil and worry of years over abstract terms, unmeaning definitions, and unintelligible rules of syntax connected with the study of grammar, find no counterpart in the whole range of school-room work. The evidences of the truth of this statement are so numerous, and they thrust themselves so obtrusively upon us from all sides, that every person who has taken pains to investigate the subject must be convinced of its accuracy. Why is this? Other branches of study are pursued satisfactorily and why should not English grammar be? There can be no reason why it should stand as an exception.

The child studies arithmetic, and each day shows an advance. Slowly

but surely the different topics are taken up and mastered, so that, after a given time, a fair examination will show that what has been carefully studied has been successfully acquired. From a condition of ignorance of the simplest arithmetical operations, the pupil has systematically passed over and mastered the successive steps of the science until he can perform readily the ordinary operations which occur in business transactions. In short there has been a change from ignorance to knowledge; the object for which the pupil labored has been secured. It is the same with the study of geography. The object of the pupil is to become acquainted with the more prominent natural divisions of land and water, the location of important cities and countries, the activities of the various nations that inhabit the globe, and, in brief, the leading facts which combined, constitute geography. Gradually as months pass by this object is attained, varying in extent with the skill of the teacher and the aptitude of the learner; at any rate there is a marked advance from complete ignorance of all geographical knowledge to intelligence of the same. In like manner I might mention history, physiology, or any branch of study introduced into the curriculum of our schools except English grammar. Unfortunately, this study, which all will readily admit as being of equal, if not of superior importance, does not meet with the same success. The schoolboy studies arithmetic, and in time is able to calculate interest, make out bills, and solve problems of considerable intricacy; he studies history and is able to give a synopsis of the Mexican War, the causes which led to the War of Independence, or account in an intelligent manner for the rise and progress of the arts and sciences in our country, thus showing he has accomplished what he set out to do; he studies English grammar and what is the result? Can he speak the language with greater accuracy or write it with more facility by reason of this study than he could before he commenced it? I think the answer to this question will be almost unanimously in the negative by experienced teachers. But the object of the study is given at the commencement of all the text-books on the subject, and the pupil is required to commit it to memory in substantially the following words: "English grammar teaches how to speak and write the English language correctly."

Experience has proven that these results are not obtained, hence the conclusion necessarily follows that there is a radical defect somewhere. Every teacher who honors his profession should endeavor to discover where this defect lies, and having found it apply the proper remedy.

The wonder is that in this age of boasted intelligence, when such rapid strides have been made in the various arts and sciences, when some of the most learned and philosophical minds of the age have been devoted to the preparation of books for the education of the young, that a subject of so vital importance as the correct and ready use of our mother tongue, should have received so little attention, or that the thought and labor given to it should have been so barren of desired results. Is it because the idea has prevailed that every child must learn to talk whether he will or no, if not with absolute precision, still with sufficient accuracy to meet the demands of ordinary social and business life, and that writing is a gift, and if one is not "to the manor born" it is per-

factly useless to ever endeavor to do more than write a social or business letter ?

However it is not my purpose at the present time to account for the existence of this state of affairs, but simply to call attention to the lamentable fact and if possible suggest a remedy. It would seem that the same success should attend this branch of school work that does any other, provided as sensible means be made use of to secure it. If a teacher wishes a class of pupils to operate correctly in the fundamental rules of arithmetic, he requires them to perform hundreds of examples. They must repeat operations over and over again for months, and even years, before they can be certain of entire accuracy.

What would be thought of a teacher who attempted to teach penmanship by insisting upon the memorizing of rules pertaining to the correct formation of elements and principles, with an exercise in writing once a month, or possibly once a fortnight? Or how long would it take a young man to learn the carpenter's trade, if his master should require him to occupy his time in committing to memory the names of the different tools or the directions for guiding the saw or plane? Imagine the ridiculous farce of a person spending a year or two in memorizing the names of the various appliances used by any mechanic, together with directions for their use, and then after he has passed a careful examination on it all, pronounce him a skilled workman! How absurd! you say, but virtually this process has been in operation for years, and is still practiced throughout the length and breadth of our land in teaching the art of using the English language.

There is a science of penmanship, but it does not follow that if a person has a complete knowledge of it he is skilled in the art of writing; also there is a science of carpentry, but its knowledge does not carry with it skill in handling tools; similarly there is a science of language, and because a person is thoroughly familiar with its details, it is by no means a guarantee that he is ready in the art of expressing thought either verbally or in writing. Here in my opinion is where the mistake has been made. Teachers have required pupils to memorize definitions, technical terms, verb-forms, rules of syntax, to parse words, and to analyze sentences, and when all this could be done with a tolerable degree of readiness and accuracy, pass them off as able to speak and write the English language correctly.

If it is desirable for the pupils in our schools to learn to use our mother tongue with accuracy, why not adopt in their instruction a more natural and direct method. The arithmetician has learned to add numbers correctly by adding them, the penman to write by writing, and the mechanic has learned how to handle tools skillfully by using them. By no other method can skill in these several operations be acquired, and it is equally true that if the youth of our land are ever taught to speak correctly, and to write fluently, it will be accomplished by constant drill in speaking and writing. Some may say that no one pretends to teach or can teach without requiring his pupils to use language daily, nay, hourly. True, but the language they use is not their own, except to a very limited extent. As soon as they are required to cut loose from the expressions found in their books and frame sentences of their own, the results are

so wretched and unsatisfactory, that most teachers give up in despair, and are best satisfied when Mary and John adhere pretty strictly to their text-book.

We need a complete divorce in our language lessons from all rules and definitions in the primary grades and the lower classes of the grammar schools, and the substitution of a carefully-prepared, systematic course of instruction in talking and writing. These should be commenced with the advent of the child into the school-room, and be continued daily, until he finds no more difficulty in covering a page of fool's-cap with original thoughts, grammatically expressed, upon some familiar topic, than he would in solving a simple problem in interest. He should not only be able to write thus fluently, but also be able to stand at his desk and talk easily and correctly in connected discourse for five, ten, or fifteen minutes. The benefit which a pupil would derive from an ability to do this cannot be over-estimated. It would be of immense benefit to him in every department of his school work, and, after his school days are over, and he becomes an active member of society, and a participant in public affairs, the very fact of his being a person of ideas coupled with a graceful and easy way of expressing them, would cause him to be a man of influence and a leader.

That a course of language lessons can be arranged, by means of which these highly desirable results can be obtained by the ordinarily intelligent pupil, trained by such teachers as the times demand, I have not the slightest doubt. At any rate, the system which has been followed for so many years has been productive of so little good, and the results which should be accomplished are so valuable and momentous, that we as teachers should make a persistent effort to abolish forever this dead semblance of language teaching, and substitute for it a living reality.

FERNS.

BY S. G. ISAMAN.

[Mountain View, Santa Clara Co.]

AS the season of picnics is now at hand, and the summer vacation not far distant, it may not be amiss to speak a few words in favor of our friends, the lovely ferns.

On account of their graceful forms and curious organs of reproduction, ferns occupy a unique place among the families of the vegetable kingdom, and are much sought after by the lovers of the curious and beautiful. Their wide distribution renders some species, at least, accessible in every locality. Indeed, it is difficult to find a district in which some one species may not be found.

The great profusion of their bright and delicately tinted, green fronds,

the gracefulness of their foliage, and their adaptation when desired to the purpose of winter decoration, undoubtedly are the reasons they are so much sought after.

How delightful to take a trip into the country, and take a stroll over the hills to find the different varieties of *Pellaea Aspidium*, *Gymnogramme*, or *Pteris*, or to drop into a shaded ravine and gather the tall *Woodwardia* or the delicate and bright colored *Adiantums* that hang in such profusion on the banks!

Surely no one can think such a study any thing but a delightful recreation, and it is to excite in others some of the pleasure we derive from the study that this article is written.

Ferns are found in great abundance in California. I have seen but a very few localities in which I have not found some species growing, but they grow in the greatest profusion in the ravines of the foot-hills, and all over the hills and mountains. Some in rich shady soils, others on rocks (*Polypodium*), the rootstocks creeping beneath the green, damp moss, while others (*Pellaea*) prefer the dry or clay soil, and sometimes grow from crevices where there seems to be no soil.

In collecting and drying ferns, but very little apparatus is needed. Ferns, unlike flowering plants are mostly very thin and delicate, and an old book will answer the purpose to some extent. Boards are better, however. I use two boards 14x20 inches, and a lot of newspapers. The ferns should be neatly spread out between the leaves of a book, or between the newspapers, and placed between the boards. Pressure can then be applied by laying on rocks to the desired amount.

There is no division of Botany that will give so much pleasure to a class of pupils as the family of ferns. Many a half hour may be spent profitably and pleasureably in studying the structure and habitats of ferns, and in mounting and naming a collection. And I find that sometimes pupils will excel their teacher in enthusiasm in collecting and mounting the species that may be found in a locality.

Ferns may easily be recognized by the fruit dots on the under side of the frond, either at the margin or between the margin and the middle, and by the circinate manner of growth. The root-stock, or rhizoma, consists of an underground stem, either upright (caudex), as in some species of *Pellaea* and *Cheilanthes*, or creeping, as in *Polypodium*, and *Pteris*. The root-stock should in all cases be gathered with the specimen, as much depends upon it in the classification.

The lower portion of the leaf is termed the stripe, and corresponds to the petiole of the leaves of flowering plants. The upper portion is termed the frond, and is the fruit-bearing portion. The fronds are either simple or compound. The divisions of a compound frond are called primal, and if farther divided the secondary divisions are called pumules.

Almost all our native ferns may be cultivated in the garden or in the Wardian case. A northern aspect is the best. They should be well sheltered from the sun and wind, or they will not be as graceful as they are in their natural haunts.

OUR BOB-TAILED CAT.

BY CLARA G. DOLLIVER.

[San Francisco.]

WE were just eating dinner when she made us her first visit ; and very well behaved she was, too ; standing off with shy dignity, until we made the first advances towards acquaintance.

I remember it as plainly as though it was yesterday ; Lou had just said, "I'll take some more cauliflower, please," when bump ! against the window-pane came something large and soft, like a bundle of old clothes.

"What is that ?" we all cried together.

"Shooting-star, mebby," said Jack, with his mouth full of potato ; he *never* would remember ! Father turned to him, and said severely, "Leave the table, sir, if you have no manners !"

"Hark !" said mother, "What is that ?"

"Yes ; that scratching noise !" said Lou, "*I'm* going to see."

"Better look out !" said Jack, who had swallowed his mouthful at the risk of strangling. "They bust sometimes !"

"Do they !" returned Lou scornfully. "Perhaps you think I'm afraid !" and she threw open the blinds, not without a little nervousness, I thought.

It was too funny ! We threw back our heads, and laughed long and loud ; all but Jack ! he had just filled his mouth again with potato, and, to avoid disgracing himself completely, he slid under the table, where he kicked and writhed in unextinguishable laughter, mother stooping over and looking at him with silent alarm.

"Do n't make such a noise ! Open the window, and let the poor thing in !" said sister Mab, as soon as she could speak.

"Oh ! let me look at her a little while longer," panted Lou, wiping the tears from her cheeks, and flying into another fit of laughter as she took another look. Evidently, there was a dog out somewhere in the darkness, and puss had taken to the window-sill for safety, for her back was humped up like a camel's, her bob-tail was erect, and about as large around as a pumpkin, her ears were laid back, and her eye glared like a coal of fire ;—she had but one !

As soon as she recovered her breath, Lou opened the window, said in very soothing tones, "Poor pussy ! Come in ! Did she see a horrid old dog ? Come, pussy, pussy."

She was doubtful at first, but Lou at last beguiled her, and she jumped in ; no insinuating calls or offers of food had the least effect upon her, however ; she stood off stiffly by the window, until we went up individually and made her acquaintance. Jack was the last one ; he crawled out from under the table, and seized hold of her stumpy tail ; she whisked it indignantly out of his hand, when he said, apologetically, "Oh I really beg pardon ! thought it was a hand, fixed convenient-like to shake."

I am afraid that our cat never quite forgave Jack for this insult, for she ever afterward treated him with cool politeness, and received his overtures of friendship with haughty dignity.

Mab was her favorite from the first ; a case of the purest ingratitude towards Lou, who had admitted her.

"If it had not been for me," said that young lady, "she would have been perched on the window-sill yet, for everybody was afraid to go to the window."

"Hoh!" said Jack, with scorn.

"I was thinking of naming her Angelina," continued Lou, "but now, because of your base ingratitude, Miss Pussy,"—taking a spoonful of tea,—"*I herewith baptize you Bob-tail, and you shall be called Bobby for short, now and forevermore.*" And she threw the tea with such good effect, that it splashed into Bobby's face and eyes, causing her to retire to a corner, where she washed her face with her paw.

If Bobby is to remain in our family, she must be permanently banished to the wood-shed ; so Mab suggested, and mother decreed, for we had two precious canary birds, whose safety must not be risked, and Bobby's most ardent admirer could not have denied her tigerish aspect.

Jack scoffed at the idea of her remaining there, but events proved that he had sadly underrated the gratitude of our cat, for she not only remained, but seemed very happy and contented, and soon became so much attached to us, that she would follow us about the yard and garden like a dog, purring and rubbing against our feet, and fairly rolling over with delight when we noticed and petted her.

She was very intelligent, and seemed to understand almost all that was said to her, especially if it was aided by a gesture ; so that Lou, who owed her a grudge for preferring Mab, called her a witch, and said that she had seen her whizzing past her window at night, mounted on a broom-stick.

If poor Bobby was a witch, she proved a very beneficent one before she had been with us three months ; even Lou admitted that, and proposed to adorn her unfortunate tail with a bunch of blue ribbons, in gratitude for the good turn which she had done us.

One dark and stormy night, mother, who is a light sleeper,—the rest of us are like logs,—was awakened by a strange sound, which at first, she decided must be the wind rattling the window-shutters, or whistling around the house ; and under this impression she drowsed off to sleep again, only to be reawakened a few moments later by what seemed to be a combination of scratching and sawing, accompanied by the mewing of a cat. After considerable expenditure of time and strength, she succeeded in arousing father, who at first said it was the wind, and then, when he had been punched and shaken into greater wakefulness, pronounced it to be "That confounded cat ;" but no amount of entreaty or argument would induce him to get up and investigate.

In obedience to his advice, mother tried to sleep again, but in vain ; the noise increased, and became almost incessant, so that at last she got up and started on a tour of investigation.

The noise, or a part of it, at least, seemed to come from Jack's apartment,

so she softly felt her way to the window ; had she fired a pistol off in the room, it would scarcely have disturbed that serene youth, but mother was as careful to be quiet, as if he had been an infant.

As she opened the blind she saw something flash in the darkness below, which startled her ; she thought it must be lightning, and held her breath to hear the peal of thunder follow, but instead, came a piteous mew from Bobby, who stood, tail erect, on the sill outside. How she got there, and why she got there, on the sill of a second-story window, in the deepest darkness of that rainy night, were mysteries which we have never been able to solve, especially the why ; Jack pretends to know the "how," and says he could almost get there himself.

"Poor pussy!" said mother, whose heart was touched, though she hates cats, "Do you want to come in, pussy?"

With great care she raised the window ; despite her care, the pulleys, which had strange and eccentric habits,—it was Jack's room, remember,—gave a peculiar jerk, and the window flew out of her hand, and went up with a tremendous bang ; at the same moment, a pane of glass crashed down stairs, mother screamed, and pussy jumped in, wet and shivering.

This combination of noises brought us all out of our beds, save Jack, who slumbered on, all unconscious.

Father seized his pistol, which was not loaded, and ran down stairs, followed by mother, armed with an old hunting-knife, which had not had an edge in the memory of man. Mab put on her slippers with a determined air, while Lou and I clung to each other at the top of the stairs, cold and frightened.

As soon as possible the warriors returned from the seat of war, with the news that the invaders had fled, leaving behind a murderous looking jimmy, and a much-damaged window ; evidence that Bobby had been the means of saving us from robbery, at least.

"Good cat ;" said Mab, as she carefully closed her door, "but I don't care about giving her my Dick for a meal."

Of course after that service, she was especially dear to us, and we soon got into the habit of letting her in every day after dinner ; she was as regular and punctual as the milkman, and never varied five minutes in the time of giving her little scratch and entreating mew at the door ; nor did she ever request to be admitted at any other time of the day. Even after she had four little kittens to take care of, she dropped in for her friendly call as regularly as ever.

I was glad when we had a chance to give those kittens away, for I always expected that Jack would burst a blood-vessel or something, looking at them and roaring ;—that boy does laugh so loud, when anything amuses him ! They were all like Bobby in color, and two of them had that same funny, rudimentary tail, which should be seen to be appreciated ; and her peculiarly awkward movements, which came, I think from her having but one eye, though of course they were not afflicted that way. Jack always said it would have killed him, if they had been.

Bobby lived with us for two years, always comporting herself like a well-bred cat, and then disappeared.

Why, how, when, we know not ; one day we missed her, and though for weeks after, we listened for that gentle scratch and insinuating mew, it never since has gladdened our ears.

TEACHING GEOGRAPHY.*

BY MRS. H. A. EDSON.

THE importance of the study of geography, has been variously estimated by different classes of individuals within my own experience. By some, it was considered as one of the essential branches to be taught in the public schools ; by others, regarded with indifference ; and at one place, I remember, the Superintendent of Public Instruction charged us "not to waste our time in teaching geography, but to bring our pupils up to a high standard in mathematics."

Every teacher here is presumed to know the effect that such instructions to a teacher would have on a school, were they carried out:—virtually silencing one set of rational faculties, for the privilege of overworking another.

Pupils do not improve in that way. Geography can be taught in connection with arithmetic, as well as not, and considering the wide range that that science takes, it is a wonder that any one at all acquainted with it, should think it unimportant. Geography is a description of the earth, as a whole ; its surface, natural divisions, and local characteristics. Its fundamental principles are the spherical figure of the earth, its rotation on its axis, its revolution round the sun, and the position of its axis—the line round which it revolves, with regard to the sun. *General Geography* comprehends a knowledge of the earth as a whole, and the phenomena common to the whole globe. *Particular Geography* has relation to particular countries, showing their boundaries, figure, climate, seasons, inhabitants, arts, customs, language, and history. This embraces Mathematical, Physical, and Political. *Mathematical Geography* determines the form and dimensions of the earth, its relations to the celestial bodies, the relative position of places on its surface, and their representation by globes and maps. *Physical Geography* in its most extended sense, comprises Geology, Hydrography, and Meteorology, with a description of the animal, vegetable, and mineral kingdoms ; but it is usually limited to the outward features of the earth, with an account of their bearings on one another. In *Political Geography* the earth is considered as the abode of rational beings, divided into larger or smaller societies, according to their diffusion over the globe, and their social relations ; it considers their language, religion, government, degrees of civilization, population, resources, and the local relations of the various countries, and therefore includes history and statistics. I know not of any other depart-

*Read before the District Teachers' Institute, Corvallis, Or., Dec. 23, 1879.

ment of science, embracing more than this one ; and broadcast as it is, it can be brought within the comprehension of pupils of a quite tender age through the medium of judicious instruction.

I am prepared to differ with those who have studied up this subject in works on teaching, and have made the first term or two of their oral instruction in geography consist in locating the articles in the school-room, school-yard, or streets, even, in close proximity to the school. It is all right to teach pupils to observe and describe objects, spell their names, and sketch their forms ; but children that do not enter school till six years of age, and then pass two years more in learning to read and in completing the First Reader, with the other exercises incident to the primary grade, have already learned more than that of geography by observation. Teaching the location of streets by the points of the compass, is unpractical and arbitrary ; no one ever speaks of them in that way ; they have their names, and the houses on them have their numbers.

Teaching geography, then, begins with the use of the Second Reader ; if the school is graded, the matter to be read in a certain number of months, is included in a little more than the first half of the book. The lessons in geography should correspond, keeping pace with the ability of the pupil to read, and understand what is read. Begin by reviewing the points of the compass, till every child can name the direction, as the teacher points, and point in every direction named ; and any places, as villages, groves, and streams with which any member of the class is familiar, may be located with reference to their direction. Take the globe, talk of its shape, the pictures of land and water on its surface ; speak of the earth in comparison ; they will understand more than one sometimes thinks ; name the large bodies of land—the small ones—the different bodies of water in general terms, and teach them their definitions, as, an island is a body of land entirely surrounded by water ; the ocean is a great body of water that is on all sides of the earth, as we see represented on all sides of the globe, etc., and proceed in this manner till the definitions are all learned ; compare the representations on the globe with the outline maps of the hemispheres ; have the pupils point out the different bodies of land and water, and define them ; show them that the whole earth is represented by the round maps, and how any part of it can be represented by a square one. Have frequent exercises in sketching the different features of the globe, as continents, islands, seas, etc., with their names neatly printed.

Take walks with the pupils, and if there is a river or any other body of water near, visit it. Point out the islands, if there are any, the miniature gulfs, bays, lakes, etc., and compare them with the outline map or globe. Thus far, we have confined ourselves to what is general. Now as we go on with the last part of the reader, in order to complete it, we may be a little more particular. Name the grand divisions of the earth. Talk about the different races of men, and point out on the globe, also on an outline map, the location of the country where each may be found—as Africa, the home of the Negro or black race ; Asia the home of the Mongolian or yellow race ; Europe the home of the Caucasian or white race ; America the home of the Indian or red race ; and

here it were well to tell the story of the discovery of America, and the spread of civilization : with every opportunity fasten some item of history. Proceed in like manner with the most common animals and productions of different countries. Give the names of the country where each may be found, and show its location on the globe and map. Point out Greenland, the home of the white bear; Africa the home of the lion, zebra, ostrich, and camel; Australia the home of the kangaroo; Spain as the country where cork and raisins are produced; South America as the country from which brazil-nuts and cocoanuts are obtained, and so on. Then the pupils can be made to understand that geography teaches them about the homes of the different people, animals, and plants which they have seen, and of which they have heard. The object of the teacher should be to give the pupils a good general idea of the shape of the earth, of the different portions of it as the homes of the races of men, also as the places where particular fruits grow, and of some parts as having continuous cold weather, and others as having continuous warm weather. This object must be accomplished chiefly by oral instruction ; but at this stage of progress, the text-book may be introduced for examination by the class, after the lesson has been given orally by the teacher ; but in no case should the pupil be required to study a lesson in the book till it has first been presented orally. This, with frequent reviews, and more frequent talks, takes us through the Second Reader ; and suitable text-books should be provided.

The class beginning the Third Reader, will commence geography by a thorough review of what they have been over, in connection with the particular names of the divisions of land and water, their positions and projections, a few of the principal mountain systems, volcanos, rivers, lakes, bays, and cities of the world ; and in a general way the most important countries. A general notion of climate as affected by distance from the equator, and by elevation ; the motions of the earth, and the inclination of its axis ; the zones and their limits, and a few of their well-known and characteristic animals and plants, with a location of the chief races of mankind. We will now take North America. Treat the continent as a whole, pointing out its separate countries, most important capes, peninsulas, islands, and arms of the sea, its divisions into mountains, plateaux, and lowland plains, naming only the most important of each. Iceland, Greenland, and Alaska, and all other Arctic geography, may be treated briefly, and chiefly with reference to climate, people, and resources. Newfoundland, the Dominion of Canada,—the climate, resources, and people, our trade with them, the form of government, capitals, commercial and international importance of the St. Lawrence and the Great Lakes, with the small importance of the other rivers, of which three or four will be enough. Locate and describe the great mountain system of the United States, Western plateaux, high Western plain, low Central plain, Eastern Slope, California Basin, chief rivers and their branches, five or six each of the great lakes, bays and capes, about twenty of the principal cities, a general statement of the agricultural staples, in the order of their latitude—rice, sugar, cotton, tobacco, corn, and wheat (this will occupy the time necessary in finishing the first part of the Third Reader); Mexico, its climate, surface, resources, and people, their lan-

guage, government, and social conditions. Name five or six of the principal cities. Central America; very briefly, the names of the states, their capitals, and their similarity to Mexico. The West Indies; principal groups, principal islands, principal ports, climate, resources and people, their colonial relations, and their commerce with the United States, if important. The United States in detail will take up the time for completing the Third Reader. The other Grand Divisions are to be treated in the same way; first as a whole, and then the more important countries comprising them, in detail. The Fourth Reader commences with the geography class at South America.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[San Diego County.]

CHAPTER X.—THE LAST DAY OF SCHOOL.

THE Wild-cat people feel aggrieved. It had been the custom, clear back to the days when they first went to school, for the teacher to have an exhibition on the last day of school, and they had always patiently borne with the "Friends, Romans, and Countrymen" who made their yearly appearance upon that day; but to have no exhibition at all—they could hardly believe it.

"It takes up too much of the pupils' time and attention," John had told the judge. "How much is the district willing to pay me for the extra work it will cost me?" he had laughingly inquired of Dr. Peters. "Exhibitions are going out of fashion," he had assured the ladies.

"Get up a petition, and get all the folks to sign it, and then he can't refuse," Alpha had told Barney McCord.

So the petition was written and circulated, and came into John's hands on the 30th of January, just two weeks before the close of school. Coyote district, hearing of what was being done, got up a similar petition and sent it to Mr. Silver, whose school would close at the same time as the Wild-cat school.

"I really do n't know what to do about it," Mr. Silver said dolefully. "I do n't want to refuse any reasonable request, but I really can't get up much more than half an exhibition." "Well, I can get up the other half, so let us have a joint affair and bring the people together. What say you?" said John. "I don't believe the people would like it unless we had a sort of contest between the pupils. We could n't have it in Coyote, for the school-house is too small, and they would n't come here except there would be some competitive strife to show which had the smarter children." "Then let us have a competitive examination," said John promptly. "We will get the new superintendent to conduct it, too. True, he belongs in our district, but we will give each pupil a number, by lot, and he won't know who is to answer a question until he asks it."

So, after some consultation, it was agreed to have no session on the afternoon of Friday, Feb. 13th, but to meet at Wild-cat school-house in the evening at seven o'clock. The exercises were to be select readings, music, and a competitive class in geography. The judge was to confine his questions to the map of California, and at the close of that exercise they were to have a spelling-down match between the old folks and the children, on Santos county and other California names.

Both districts were pleased with the idea, and to John's surprise the judge promptly consented to be the examiner. Both the teachers had fallen into the mistake of thinking that the judge's knowledge of geography was as limited as his acquaintance with grammar, and they did not stop to think that one who had lived in California since 1848, and had traveled over the greater part of the State while prospecting; and who had read all the election returns with as much eagerness as they would the latest scientific discovery, might think himself to be as well posted in California geography as they themselves were. You may be sure that preparation for the coming contest was not neglected during the next two weeks, by old or young, and each side was confident of victory when the momentous night arrived.

Seven o'clock found the Wild-cat school-house well filled with a joking, noisy crowd, which fired off occasional scattering volleys of good-humored encouragement to the younger folks.

"Now, Thomas Jefferson, show your pap that the race is improving," sang out a Coyote man.

"You 'uns must n't spell we 'uns down too ha'sh," said a jolly Tennessean.

"Jacob, I begin to feel sorry for you, already," remarked Thomas to young Jacob Barnes.

"If you feel like backing out, we can fill up the time, and save your feelings," retorted Jacob.

The bell now rang for order, and both schools joined in singing "America," which somewhat quieted both old and young. When a school gets noisy and restless there are few things that are as effectual in restoring quiet as a good song. Some eight or ten select readings were then given, followed by more music, and then the geography class was called.

Each district furnished eight pupils whose ages ranged from ten to sixteen years, and there were numerous small bets offered and taken in the back part of the room, as to which side would answer the most questions. Sixteen numbers were written on sixteen small cards which were put into a hat, and each pupil drew out a number. The pupil having No. 1 was to answer the first question, No. 2 the second question, and so on.

The judge arose and looked benevolently over the crowd, and at the class—"It pleases me," said he, thrusting his left thumb into the pocket of his vest, while his right hand rested upon a newly-purchased cane,— "It pleases me to see the people of these two sister valleys come together for the glorious purpose of encouraging the young and rising generation in their struggles up the ladder of learning. Those whom we have selected to guide the steps of the coming voters, have wisely selected our glorious State of California with its

gorgeous and unequalled climate, as the target at which these young ideas are to shoot." This being undoubtedly intended for a joke, brought forth great applause.

"I do not intend to make you a speech, but I desire to say, that since I was elected for the honorable and responsible position of examiner, that I have made myself somewhat familiar with the methods of Prof. Cameron, the distinguished principal of the Santos schools, and have borrowed his outline map of Californy, as well as his methods, for this occasion. I was much pleased and instructed by hearing his class give the meaning of our various geographical names, and I desire the class, if they know them, to give the translation of each name which they mention. Have they been taught these?"

Mr. Silver and John Dean bowed assent.

"Then we will begin. No. 1 may bound this great and rising commonwealth."

"California, named from an imaginary island in a Spanish novel, is bound on the north by Oregon, so named from the Oregon or Columbia river (meaning great river of the West); on the north-east by Nevada (white as snow); on the south-east by Arizona, said by some to mean sand-hills, by others, to be the name of an Indian (virgin) queen. The Colorado (red) river separates California from Arizona. Mexico, named after Mexitli a god of war, is on the south of us. On the south-west is the Pacific or peaceful ocean," said Alpha Black who held No. 1.

"Very good," said the judge. "You do your teacher credit by the varied and critical extent of your knowledge. No. 2 may start at our most southern harbor, and tell us what counties he would see, traveling by steamboat to San Francisco."

"I would start at San Diego (St. James) and sailing up the coast I would see Los Angeles (the angels) county, Ventura (luck), Santa Barbara, San Luis Obispo (St. Louis, the Bishop), Monterey (Mount King), Santa Cruz (holy cross) San Mateo (St. Matthew), San Francisco (St. Francis), Marin (named after an Indian chief who gave the whites much trouble), and Alameda (a poplar grove)," said Willie White.

"Right! correct!" said the judge. "That boy did n't sleep much on his journey, I'll bet. No. 3 may go from San Diego county to San Francisco by rail."

Jake Barnes of Coyote took the pointer, and began, pointing at San Diego city, "I would get on the cars at San Diego, and—" a dozen hands went up.

"If you please, sir, my pa says he will be a rich man when the railroad gets to San Diego, so I do n't think he can get on there," said another Coyote pupil, rather illogically.

"I can get on at Ft. Yuma," said Jacob whose sharp eyes had spied a dotted line running north-west, "I would cross San Bernardino (St. Bernard) county, Los Angeles, Kern (named after an explorer), Tulare (from the tules around the lake), Fresno (ash), Merced (mercy), Stanislaus (a Spanish Christian name), San Joaquin (St. Joachim), Contra Costa (the opposite coast), Alameda and San Francisco."

"Good. A bright pupil, Mr. Silver. Will No. 4 point out ten other counties, and tell me why they are so named?"

"Alpine (height), Amador (lover), Butte (lone mountain), Calaveras (place of the skull), Del Norte (the north), El Dorado (land of gold), Mariposa (butterfly), Placer (gold mines by a river bank), Plumas (feather), Sacramento (sacrament), San Benito (St. Benedict.)"

"That is good, quarter increase," said the judge as No. 4 stopped, quite out of breath. "Then we have Sutter county, named after the immortal Sutter, and Humboldt county named after another eminent Californian. (!) The poor Indian is remembered in the counties of Siskiyou, Shasta, Modoc, and—and several others." Here the judge paused for want of supplies and took a glance at the notes, which Mr. Cameron had written out for him. The judge then asked a number of questions about the formation and government of counties, how they fixed the position of the county lines, etc., and then requested No. 5 to name "Some of the beautiful islands which dot our shores and protect our commerce."

"San Clemente, he was a *merciful* saint," said Thomas, "Santa Catalina—we call her Kate, Santa Barbara, San Nicholas—that's Nick, San Miguel—that's Michael, he's right near Santa Rosa, Santa Cruz, and Anacapa (Cape Ann?). Then there are the Farallones (needles); Alcatraz (pelican), Goat, Mare, and Angel,—that's Michael again, the archangel you know."

"A less familiar tone," began the square, but Thomas interrupted with much seeming earnestness.

"You see I know 'em so well that I can't help being familiar with them," which brought great applause from the crowd.

"The capes of California are of considerable importance to navigators," continued the judge, "but it is not wise to burden the mind too much with such things. No. 6 may tell us a few of the many capes which protect our bays from the too strong winds which would disturb our commerce, as you would see them in a voyage down the coast.

"Cape Mendocino, Cabrillo, and Arguilla were named after people; Point Loma means hills; Point Arenas, sands; Point Reyes, kings; Bonita and Lobos mean pretty and wolf; Point Pinos—there are pine trees; Point Sal, that's salt. Point Conception divides the climate of the southern coast from the climate of the middle coast of California," said Martin Ross of Coyote.

"That is an unsystematic way of reciting," said the judge shaking his head. "You should have begun at Point St. George and named the capes in regular order to Point Loma. Besides you omitted seeing some of the most important capes."

"Reckon he must have been sea-sick part of the time, or it might have been foggy," suggested Thomas.

No. 7 then pointed out the bays of California, naming twenty of them and telling how Peter and Paul were remembered in San Pedro and San Pablo bays, while "the names of Capt. Bodega and Sir Francis Drake are kept fresh in our minds by the waters which bear their names," with such glibness as left no doubt in the minds of all (himself included), that he was an accom-

plished geographer. The judge's next question, as to which were "ports of entry," brought forth no response, until Thomas ventured to remark that he "thought they could enter any of the ports if the weather and tide were right."

As the judge's knowledge of ports of entry was rather limited, he contented himself with mentioning our two ports, and said that we probably should soon have a third—at Wilmington.

"The mountings of Californy" said the judge, "are the back-bones of the State. They enclose its great valleys like a picket fence which has but one gate opening out of the field, and that is—"

"The Golden Gate," answered two or three eager voices as the judge paused and looked inquiringly around. "And a happy thought it was to call it the Golden Gate, though I believe it was so named before the discovery of gold in '48. If I was a geologist," continued the judge, "I should delight to explain to you the climatic effects of the great *Sery Nevady* range upon this State, and our sister states and territories lying in the great basin beyond. West of this great snowy range, is a land flowing with milk and honey, with numberless little rivers rushing towards the sea, and pouring their wealth of gold and silver into the laps of our people, while on the east are dry, barren wastes of sage-brush and grease-wood. Great mounting peaks are apt to be named after great men who tower above their fellows, as these peaks above the ranges on which they rest. No. 9 may illustrate my remarks by mentioning some of these peaks named after some great persons."

"Brewer, Tyndall, Whitney, Dana, Lyell, Downieville Buttes, Hoffman, Lyon's Peak, Hamilton, and—and Diablo," added No. 9, after a moment's hesitation.

The Spanish-speaking part of the assembly laughed and applauded.

No. 10 then named a dozen other peaks and ranges, and the judge asked for "the beautiful lakes which nestle in the bosom of our valleys, and lend an added charm to the surpassing loveliness of our natural scenery."

Mark Peters was a natural mimic, and seizing the pointer, he struck an attitude very much like the pompous one of the judge, and began, "Here you see Kern lake, named after the distinguished explorer of earlier days; Buena Vista lake is so called from its beautiful view; Lake Tulare surrounded by the unrivalled tules of California, which are near relatives of the bulrushes which protected Moses in earlier days; Clear lake, the pride of Lake county; Borax lake, furnishing borax enough to wash the whole of California; Tahoe, which probably means clear water, though Mark Twain says it means grasshopper soup; Honey, Eagle, and Goose lakes give a faint glimpse of our great natural resources; Mono is said to mean monkey, though only his Darwinian descendants are found on its shores; Owens lake brings to mind one of our original pioneers, while Mohave lake takes its name from the *three mountains* which overlook its waters; Dry lake, with the rivers of sand which pour into it when the wind is strong, shows the great variety—"

Here Mark was interrupted by the uproarous shouts of laughter from the crowd, who one by one had recognized his audacious mimicry of the judge's manner and tone. But it takes a great deal to ruffle the repose of mind which

the judge prided himself upon, and as Mark seated himself, the judge looked benevolently at him and said, "The boy has evidently learned some things quite well, but he has yet other things to learn before he attains the wisdom of a man."

"If you please sir," said Willie White, "the one who said the mountains, left out Mt. Kaweah (seceders)."

"The time for correcting a fault," said the judge, "is at the time of the commission thereof. Besides I could name dozens that are not named in the books, and tell you of many others, now nameless, that are yet to serve as monuments for future great men. It won't do to use up all our resources at once. Number 'leven can give our rivers their names."

No. 11 named about twenty of the so-called rivers of California, looked helplessly at some others that he had forgotten, and sat down.

"Pretty fair," said the judge, "though you omitted the Russian river, which serves to remind us of early Russian explorers, the Salinas or salt marsh, and the Amargosa or little river. But I forgot, I should have allowed the class to fill up these vacant places. The remaining five may name, in the order of their numbers, the cities, as I point to them."

But it would take too much space to report all the judge's wise questions about commerce and manufactures, native animals and plants, products and natural resources, imports and exports, and the equally wise and confident answers to most of the questions; so it will be sufficient to say, that both classes did so well that both sides claimed the victory, but secretly resolved to study harder the next term so as to leave no doubt as to which was the successful side in a future contest.

The spelling-down was great fun to the younger portion, who triumphantly beheld the fall of their elders, one by one, and had not John Dean put himself on the side of the older people while Mr. Silver gave out the California names, the older folks would have suffered a most ignominious defeat.

Soon John was the only one left on the older people's side of the house, while Alpha Black, Jake Barnes, and Ellen Meeks were still standing. After a while Alpha and Jake sat down crushed beneath the weight of Mt. Tamalpais, and soon after John put an extra o in the middle of Diablo, and Ellen had the never-to-be-forgotten honor of spelling down the teacher.

Then, of course, there were the usual number of complimentary speeches, a little more music, and the people returned, well pleased, to their homes.

EDUCATIONAL MAXIMS.

That was an excellent saying of the Spartan instructor, "I will accustom the boys to take pleasure in what is good and to abhor what is evil." Truly the most excellent and proper purpose which education could aim at.—*Plutarch*.

Among the Persians the boys were especially trained to temperance, by seeing how their elders lived temperately.—*Xenophon*.

PRACTICAL COMPOSITION FOR GRAMMAR GRADES.

BY JOHN SWETT.

[Principal Girls' High School, San Francisco.]

SPECIAL DIRECTIONS FOR PUPILS.

I. AVOID "fine writing."

2. Never use two words where one will fully express your meaning.
3. Avoid long and complicated sentences.
4. Divide into paragraphs and punctuate *as you write*.
5. In correcting your first rough draft, observe the following order :
 - a. Cross out any *adjectives*, or other words that can be spared.
 - b. Interline any omitted words, or transpose any words, phrases or clauses to a better position in the sentence.
 - c. Substitute more exact words whenever by so doing you can make the sentence clearer.
 - d. Go over your composition very carefully, with reference to 1. Spelling; 2. Capitals; 3. Punctuation; 4. Grammatical correctness; 5. Dot your *i's* and cross your *l's*.
6. Copy in a legible hand-writing.

GENERAL PRINCIPLES OF SENTENCE-MAKING.

1. Every sentence must be complete. It must contain at least one principal subject, and one principal predicate, each of which must either be expressed or clearly implied.
2. Explanatory words, phrases, or clauses, must be connected as closely as possible to the words which they explain or modify.
3. In simple sentences, be careful about the position of words and phrases: in complex sentences, about the position of clauses and the use of connections: and in compound sentences, about the use of conjunctions of the *and* type.
4. When there are several adverbial phrases or clauses in a sentence, they should be distributed over the sentence, instead of being crowded together near the close.
5. Avoid writing long complex or compound sentences. It is better for beginners to write short sentences.
6. Use only words whose meaning you fully comprehend.
7. Express simple ideas in plain words.
8. Avoid the use of high-sounding adjectives, and high-flown language.
9. Use only words enough clearly to express your meaning.

THE PARAGRAPH.

A paragraph is a closely connected series of sentences relating to the same subject, or to some particular part of a subject. Sentences are built up of

words, phrases, and clauses ; paragraphs are made up of simple, complex, or compound sentences ; composition consists of a succession of connected paragraphs.

The art of dividing a piece of composition into paragraphs is best learned by noticing carefully the paragraphing in your readers, histories, or other books ; but the following directions may be of use to beginners :

1. In general, make a new paragraph whenever you make a new turn of thought.

2. Denote a new paragraph by beginning the sentence a short space to the right of the left hand margin.

The sentences included in one paragraph should all relate to the same division of the subject.

4. The line of thought should be continued between paragraphs, if necessary, by some such connections as *and*, *but*, *moreover*, *however*, *thus*, *at the same time*, etc.

SPELLING.

BY SUPERINTENDENT F. W. PARKER.

[Quincy, Mass.]

I TRANSCRIBE on paper or tablet the pictures of words that I have in my brain. This is the process of spelling, and needs not the slightest qualification or explanation to make itself clear to any one who will think of exactly what they would do when they write a word. If we misspell a word, our brain-picture of it is defective ; when we *think* it wrong, we are comparing the written form with a brain-form. Our attention to this form brings it more distinctly into the consciousness, and the mistake is seen and corrected.

Words oftentimes come into the brain as combinations of sounds (names of letters), which must be translated into forms before they can be written. If this has not been done previous to the act of writing, a double and difficult process takes place, which, together with the absorbing thought of composition renders such translations imperfect. Thus many persons who spell exceedingly well orally, make many mistakes in writing, A teacher took three prizes at spelling-schools, and made five mistakes in spelling in a short note to a school committee !

The foundation of spelling should be, then, the reception in the brain of forms, not sounds. The most favorable conditions for the mind's perception and retention of correct word-forms, when ascertained, will give us the best possible method of teaching spelling. First, then, the closest attention to a form to be retained is brought about by the most energetic exercise of the sense of sight upon that form. The closest attention to a form is attained by attempting to draw it. The closest attention to a word that can be given, is to draw it,—that is, to copy it in writing.

All primary study of spelling should be by copying words. Let me repeat : as drawing is the best method of training sight, so drawing words is the most economical and practical method of teaching spelling. Trained sight will take in a word-form at one seeing, so that it can be correctly reproduced with great ease.

Two more very important principles, and I will give the details of a natural method. The forced attempt to reproduce or express that which is vague and indistinct in the mind is detrimental. Original mental representations or pictures are the results of repeated action of the perceptive faculties upon the same objects. They grow into distinctness very slowly indeed ; thus the little child must hear the same word hundreds, perhaps thousands, of times before it attempts to utter it. There comes a time, however, when the accretions of impressions of the same spoken word, by its own vividness, force the child to utter it,—the first word.

In like manner the word-form, slowly produced by close seeing (writing), should not be reproduced until it is distinct in the mind. The child should be prevented, so far as possible, from seeing or even reproducing incorrect forms, for they stamp themselves as readily upon the mind as correct forms, and will turn up on paper as unwelcome intruders. The same is true of all forms and expressions,—capitals, punctuation, and syntax. The details of the method, founded upon these principles, which I have endeavored to follow for several years,—and I think with excellent results,—are as follows :

1. The first year (lowest primary) should be spent in copying words, with little or no reproduction without copy. Language consists of reading (recalling ideas), and composition (expressing them). Reading and composition should be taught together as two branches of language. Every word and every sentence taught should be copied from the blackboard on the slate, and then read, from the slate. No matter how crude and awkward the first copyings are, they should be commended and the writer encouraged. They are types of the child's crude percepts. Perseverance will soon bring order out of seeming chaos. The better the picture of the word the child makes, the more distinct will the impression be upon the mind ; therefore, technical writing should be taught from the first. The writing of words and sentences helps reading essentially, and if it were done for no other purpose, the time would be well spent,—time which would otherwise be given to listlessness or tiresome idleness.

2. At the end of first year, quite a number of distinct mental word-pictures will be stored in the mind, ready for reproduction. Begin carefully ; after a word has been copied from the board, erase it, and have it reproduced without copy. Do the same with two words, then three, and so on. Write a sentence, erase part of it,—and then cause the whole to be written. *Never have one word written incorrectly, if you can possibly avoid it.*

3. Teach those words only which your pupils use in language. This rule holds good throughout the course. By language I mean words used in any and all recitations. When a word is misspelled, have it corrected immediately. Keep a list of misspelled words, and teach no other words until they are *learned*.

4. Teach the most-used words first,—words like *is, are, were, was, been, shall, will, they, there, their, which, whose*, etc.

5. Teach words separately, and in sentences. The best test of spelling is writing from dictation.

6. No word should be taught until it is the sign of a distinct idea in the mind of the learner. The first year, the child should be trained to express thought orally; the second year, to talk with the pencil, which involves the reproduction continually of words which he knows. The spelling is made a minor branch of language-teaching taking very little extra time.

7. During the third year, oral spelling can be introduced as a valuable auxiliary. It will be found in the third year, if this method has been faithfully followed, that children will write correctly most new words after reading them *once*; this is a trained product of trained sight.

8. All study of spelling should be by copying words and sentences in the best possible hand-writing. The copied words should be marked and corrected just as carefully as any other lesson.—*The Primary Teacher.*

EDITORIAL DEPARTMENT.

EDUCATIONAL REFORM.

THE Quincy craze has passed us and gone West. After an unusually severe attack of educational reform (theoretical) the newspaper press has quietly simmered down to an occasional mild article on the kindergarten system.

And our John-is-a-noun, nominative-case—schoolmaster, has settled down in the old rut, congratulating himself that the danger is over.

The question arises—is the California school system so perfect that it is incapable of improvement?

We think not. Our course of study is unsystematic and badly arranged; our text-books, in some instances, inferior; and the drones in our profession are quite as numerous as in other less-favored places.

This summer the system will generally be re-organized. The new School Law provides the manner in which the county governments shall provide for the management of the schools within their respective jurisdictions. The State retains little or no control over the schools, but delegates her authority to the local officials. In accordance with the law, county Boards of Education have already been appointed in half the counties; and, soon, we expect to hear that each county is provided with its local Board.

In revising the course of study, the Boards will have an opportunity to exercise the greatest care and judgment. The present course is a hodge-podge, a sort of *omnium gatherum*. The new course should be based on the principle that our

State needs workers, not talkers; that a knowledge of the common things where-with the individual has daily dealings, is of greater importance than the most intimate acquaintance with dead languages or abstract sciences.

Another point not to be forgotten is, that in a State so extensive as California, with such differences of surface and climate, such a variety of natural resources, a course of study applicable for one section will hardly do for another. Of course, the essentials of an education should be common to all. Reading, writing, arithmetic, and spelling are not likely to be neglected anywhere. With these branches, it is rather the How than the What, on which teachers will differ. It is in regard to grammar, history, geography, book-keeping, physiology, and elementary physics that there will be some conflict of opinion.

We believe the best teachers are quite well agreed that there is no place for technical grammar below the high school or the advanced grade of district schools. Constant and systematic composition exercises, oral as well as written, should supplant it in primary and grammar classes.

Physiology and hygiene, studies taught too often in a perfunctory manner, should have a prominent place in a well-devised course of study. Instruction should begin even in the lowest grade with easy practical lessons on naming and locating the organs of the body, giving their uses, and learning how properly to care for them.

Elementary physics and single-entry book-keeping should have a place on the course, and, what is more, be thoroughly taught. The quantity of geography and history, now required, can profitably be diminished, so that proper attention may be given them.

In claiming for physiology, elementary physics, and book-keeping, a place on every school course of study, we know the objection that may be made. It will be urged that we already attempt too much, that it is high time to cut down our course.

But this view is not based on an intimate knowledge of the subject. We now teach, not too many things, but the wrong things. The pruning knife may profitably be applied, and when the dead branches of our tree of knowledge are trimmed off, let us engraft in their place, young and vigorous shoots which may bear fruit to appease the natural wants of our people.

THE NORMAL SCHOOL.

WE believe the trustees of the Normal School made a great mistake in deciding to erect a building of brick in preference to wood. In our climate wood is certainly more comfortable in both summer and winter, not to say anything of the increased expense in building of the former material. In a house as isolated as the Normal School, standing in the middle of a large square, there is no danger of fire except from within; and with this a frame building is as safe as one of brick or stone. The architect of the building has been selected, and the maximum cost of erection fixed at \$130,000. The accommodations will be as ample as in the old building, and the halls, class-rooms, laboratories, etc. much better arranged. Prof. Allen has drawn the general plans for the inside, himself, and from his description we believe the new house will be a model of convenience, comfort, and adaptability for the purposes designed.

RE-EXAMINATION OF TEACHERS.

WE are in daily receipt of letters inquiring the authority of county Boards to re-examine teachers, already holding valid certificates.

The legislature recently passed a law to continue all existing certificates to the date of their expiration. This law we suppose is constitutional.

It is true, however, that the local authorities, either the county Board of Education or the Board of District Trustees may insist on their teachers holding a county certificate of recent date. In this case, the teacher has no recourse but to submit to a re-examination.

We understand that in some counties, the Boards have already announced their determination to hold a general examination at an early day.

We consider this whole practice unfortunate and calculated to do infinite harm to our schools. As most of the county Boards consist largely of teachers, we trust they will maintain the highest possible standard of scholarship and general fitness for those who desire certificates.

THE OFFICIAL DEPARTMENT.

THE JOURNAL goes to press promptly this month, so as to be out on the first. In consequence, we have not received the greater portion of the Official Department. The new school law is too long to be published in full, but we intend in our next number to present a full synopsis of all its important points. It is now being printed at the State printing office, and a copy will be sent to each district, so trustees and teachers will soon have an opportunity to become acquainted with its provisions.

A GOOD NUMBER.

THE next number of the JOURNAL will be more than ordinarily attractive and valuable. In addition to three illustrated articles on interesting topics, there will be a number of the practical articles on methods, so long promised. The departments will be good, and the local department will include a full list of the members of the county Boards of Education, recently appointed throughout the State.

ANOTHER REMINDER.

WILL subscribers please bear in mind that subscriptions for 1880 are now due. We should be particularly pleased also to hear from all still in arrears for 1879. There are quite a number of the latter, and we trust that prompt remittances will enable us to get our books clear.

READERS will observe that the paper in this number of the JOURNAL, is of a darker tint than usual. This is because the consignment ordered by us on the 26th of February, and now already two weeks overdue, has been detained somewhere in the Utah Basin, on account of the heavy storms recently prevailing.

We find it a source of great embarrassment to have no place of home supply, but to be entirely dependent on the East, for good paper. To be sure, we might use a poorer quality; but the principle on which the JOURNAL has always been conducted, is to be unsparing in labor and expense in making an attractive and valuable periodical.

SOME misunderstanding exists, so we learn, in regard to the publication of the proceedings of the last session of the State Teachers' Association. Briefly and plainly, the circumstances are these: The Association passed a resolution to publish its proceedings, and appointed a committee of five to superintend the publication. This committee requested an estimate of the cost from the publishers of the JOURNAL. One hundred fifty dollars was the estimate.

They then asked for subscriptions from the convention and about forty dollars was the sum total obtained. This money they paid to the Treasurer of the Association, who, we presume, still has it in her possession. The publishers of the JOURNAL, desirous of having the proceedings published, but decidedly unwilling to repeat the experience of last year (when they risked the publication and came out with a considerable loss), requested further subscriptions, but not meeting with any general response, dropped the whole matter, and refunded the few dollars sent personally to them. Those who paid for copies, can undoubtedly get back their money where they paid it in, *i. e.* from the treasurer of the society. This is all we know about the matter.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

AN ACT TO PROTECT THE SCHOOL DISTRICTS OF THIS STATE
FROM INJURY DURING THE YEAR EIGHTEEN HUNDRED AND
EIGHTY, BY THE OPERATION OF SECTION TWELVE, OF
ARTICLE THIRTEEN, OF THE CONSTITUTION.

*The People of the State of California, represented in Senate and Assembly do enact
as follows:*

SECTION 1. No school district shall forfeit or be deprived of its apportionment of State and county school funds which shall fail to maintain a six months' school during the year ending June 30th, 1880, by reason of the change re-

quiring the moneys to be derived from poll taxes to be paid into the State School Fund instead of, as heretofore, into the County School Fund, section one thousand eight hundred and fifty-nine of the Political Code to the contrary notwithstanding.

SEC. 2. District Trustees, Superintendents of Schools, and County Auditors are hereby granted power to draw their orders, requisitions, or warrants against the August apportionment of school moneys for the year 1880, in payment for the salaries of teachers for services rendered prior to June 30th, and in the year 1880; and it is also made the duty of the County Treasurers of the several counties of this State to honor and pay such warrants as other warrants drawn upon the School Fund are paid, section one thousand six hundred and twenty-one of the Political Code to the contrary notwithstanding.

SEC. 3. It is hereby made the duty of the County Auditors of the several counties of this State on or before the first regular meeting of their respective Boards of Supervisors in September, 1880, to certify to said Board the total amount of the warrants issued by him, in accordance with section two of this Act, and the amount so certified shall by said Boards of Supervisors be added to the other amounts which shall be found necessary to be raised for county school purposes, and when so added, shall be levied, assessed, collected, and paid, and shall thereafter be used and expended as other county school funds are used and expended.

SEC. 4. This act shall take effect from and after its passage.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

MR. DAILY recently delivered an address before the American Geographical Society in New York, in which he reviewed the geographical work of 1878 and 1879. Among other interesting facts he stated that the measurement of a new arc of the meridian, instituted by the governments of France and Spain had been completed. The great difficulty was to extend the line of triangulation from the coast of Europe to the coast of Africa, which, after many failures, was finally accomplished by means of the electric light. The vapors of the Mediterranean proved impervious to the rays of the electric light, and to produce sufficient intensity it was necessary to construct an electro-magnetic apparatus, propelled by steam engines. After twenty days of repeated efforts and failures, the electric light from Tetica, in Spain, became visible to the eye on the African coast, like a round, reddish disk on the horizon, and on the following day the electric light from Mulahacen, in Spain was seen, and the work was accomplished, so that we now possess a meridian arc of 27° , the greatest ever measured on the surface of the earth.

CELLULOID, so extensively used at the present time in the arts, is a species of solidified collodion produced by dissolving gun-cotton in camphor with the aid of heat and pressure. In the process invented by Hyatt brothers, gun-cotton is ground in water to a fine

pulp, then subjected to a great pressure in a perforated vessel to extract the bulk of the moisture, then it is thoroughly mixed with finely comminuted gum-camphor. Coloring matter is added at this stage if desirable. The mass is next subjected to a powerful pressure which expels the remaining moisture, and brings the pulp and camphor in more immediate contact. While subjected to this pressure the mixture is heated to about 300° , when the camphor fuses and as its volatilization is impossible, it desolves the pulp. The product of this transformation is celluloid. After it is taken from the press it hardens and becomes tough and elastic. Celluloid is extensively used as a substitute for ivory, so that the business of ivory workers and importers has been seriously affected.

UTILIZING POWER.—A new invention has been tried with success in London in the utilization of the power generated in stopping street cars for the purpose of re-starting them and thus saving the extra exertion of the horses. The contrivance is a coiled spring, which is wound up by the stopping of the car, and which, when released, acts on the wheels so as to impart motion. It acts, too, as an assistance to horses up a steep grade, the power having been acquired in a preceding down grade and kept stored in the spring until the energy is required.

PROF. ALEXANDER AGASSIZ left his studies long enough to buy largely in Calumet and Hecla copper mining stock when it sold for five cents on the dollar, and now he rejoices in an income from that stock of \$2,500 a day. Discerning man.

DISCOVERY IN PHOTOGRAPHY.—The Cincinnati *Commercial* says that Judge Longworth, after months of experiment, has discovered the process used by a few old-world photographers in the preparation of sensitized or dry glass plates. The value of this happy result cannot be over estimated. By the method referred to the amateur or landscape photographer can now prepare the plates at home in any number desired, stow them away in a valise, and taking with him a portable camera and folding tripod, start out on his labors unencumbered with chemical bottles and other endless supplies. Another and very important advantage arising from the discovery is the fact that the negative can be taken almost instantaneously, the Judge having secured faultless pictures of sailing vessels in motion. Landscape views by this means do not possess the blurred look occasioned by the restless foliage. The artist now on his country rambles when meeting with a bit of scenery especially pleasing to his eye, can set the tripod, place it on the camera, draw the slide, raise the curtain, let it fall and the work is done. The plate is then placed away in darkness for treatment on reaching home, and the artist, with a loss of but three minutes time, moves on to other scenes.

A SIMPLE FORM OF AUDIPHONE.—A gentleman formerly connected with the Philadelphia *Ledger* is reported to have discovered a simple form of audiphone, which he has tried with satisfactory results, although he is very hard of hearing. A few days ago he was explaining the principle of the audiphone to some friends, and to illustrate his remarks, put a folded newspaper between his teeth, bending it over in the form of the audiphone. To his surprise he found that he could hear as well with the newspaper as with the audiphone. He subsequently attended an auction sale, and putting the catalogue between his teeth, and bending it down with one hand, heard all that was said, although without some such contrivance he could hear nothing. The experiment is a very simple one, well worth trying by all who are hard of hearing. Newspapers, pamphlets, cardboards, even sheets of writing-paper seem to serve the purpose as well as the hard rubber audiphone.

THE PLANETS IN MAY.—*Mercury* is a morning star rising on the 10th at 4 h. 12 m. A. M.; on the 20th at 4 h. 15 m. A. M., and on the 30th at 4 h. 22 m. A. M. He is near Saturn on the 6th; near the moon on the 7th; near Venus on the 20th, and in his ascending node on the 29th. *Venus* is also a morning star rising on the 10th at 4 h. 23 m. A. M.;

on the 20th at 4 h. 14 m. A. M., and on the 30th at 4 h. 7 m. A. M. She is near Saturn on the 1st, and near the moon on the 7th. *Mars* sets on the 10th at 11 h. 46 m. P. M.; on the 20th at 11 h. 18 m. P. M., and on the 30th at 10 h. 51 m. P. M. He is near the moon on the 14th. *Jupiter* is a morning star rising on the 10th at 3 h. 37 m. A. M.; on the 20th at 2 h. 7 m., and on the 30th at 3 h. 35 m. A. M. He is near the moon on the 5th. *Saturn* is a morning star rising on the 10th at 4 h. 9 m. A. M.; on the 20th at 3 h. 38 m. A. M., and on the 30th at 3 h. 5 m. A. M. He is near the moon on the 7th.

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

PROF. TOWLE of the Vallejo High School, sends answers by twelve of his pupils to the magic square puzzle proposed by Mr. Sturgis in the April number of the JOURNAL. The answers include arrangements of all odd numbers from "3" to "25," but we select only those of "5" and "9" for publication, as the *method* will be sufficiently obvious on a close inspection of these two.

The names of those sending answers are, Misses Goldie Benas, A. F. Hilton, J. R. Halliday, Aggie McKnight, Lizzie Moulty, and N. A. Browne, and Masters T. E. Kavanagh, W. A. Devlin, J. W. Kavanagh, J. B. Brosnahan, Grant Halliday, and E. Jones.

47	58	70	80	1	12	23	34	45
57	69	79	9	11	22	33	44	46
68	78	8	10	21	32	43	54	56
77	7	18	20	31	42	53	55	66
6	17	19	30	41	52	63	65	67
16	27	29	40	51	12	64	76	5
26	28	39	50	61	73	75	4	15
36	38	49	60	72	74	3	14	25
37	48	59	71	81	2	13	24	35

NELLIE A. BROWNE, Junior Class.

17	24	1	8	15
23	5	7	14	16
4	6	13	20	22
10	12	19	21	3
11	18	25	2	9

THOMAS E. KAVANAGH.

EDITOR WHITE sends us a fine lot of communications for this department, but at too late an hour to insert them all. We, therefore, defer them to our next issue, when the Mathematical Department will be unusually full and interesting.—[EDITOR JOURNAL.]

NEWS RECORD.

OUR record closes on April 24th.

Foreign and Domestic.

Storms, unprecedented for April, have raged on the Pacific Coast, this month. Rains in the valleys and along the southern coast, and snow in the north and on the mountains, have caused great damage almost everywhere on the Pacific Slope. Snow-slides have detained railroad trains, damaged the road-beds, overwhelmed houses; and floods have ruined thousands of acres of wheat fields, and injured property to the extent of millions of dollars.

The recent elections in England have resulted in a sweeping victory for the Liberal party. This will result in the retirement of the Beaconsfield Ministry, and the return to power of the Liberals. It is believed that Gladstone, who had announced his retirement from office, will be induced to again assume the premiership.

A terrible famine has broken out in Armenia. Thousands have already perished from hunger, and the destitution is reported as spreading. There is also considerable suffering from floods, and the failure of crops, in Hungary.

The California Legislature adjourned *sine die* on the 16th. It was on the whole, the best legislative body ever convened in this State. The members were earnest and indefatigable in their attention to their duties.

The Giant Powder Works at West Berkeley, California, exploded on the 18th, completely shattering the factory and adjoining buildings, and killing twenty-three men.

It is expected that Lord Lytton, the present Viceroy of India, will go out of office as one of the results of the recent Liberal victory in England.

The immigration into the United States has lately been greatly on the increase. For the past seven weeks, more immigrants have landed in New York, than during the same period in any previous year.

The war between Chile and Peru still continues. The latter power is almost exhausted, and but little of her territory is unconquered, but she still holds out. At the latest advices, the Chilean fleet was blockading and bombarding Callao.

The war in Afghanistan also continues. A number of the native chiefs are struggling for supremacy, but all seemed agreed on opposition to the British. On account of the change in home administration, the policy of the latter is not now well determined.

The town of Marshfield, in Missouri, was almost completely destroyed on April 19th by a tornado, which killed more than thirty people. The storm passed through several adjoining counties, inflicting great damage to property and more loss of life.

During nearly the whole of the third week in April, California was completely isolated from the East and Europe, on account of the suspension of telegraphic communication.

The Southern Pacific Railroad is now being extended east of Tuscon. Daily trains connect that city and California. Another railroad is projected and in course of construction, extending from St. Louis to San Francisco. Its eastern terminus is Albuquerque, New Mexico.

Charles DeYoung, the senior proprietor of the San Francisco *Chronicle*, was assassinated in the business office of that paper, on the evening of April 23d, by the Rev. I. M. Kalloch, a son of Rev. I. S. Kalloch, at present mayor of San Francisco.

Denis Kearney the sand-lot agitator, at length, after the law's usual delays, has been incarcerated in the House of Correction for six months.

Gold has been discovered in large quantities in Southern India.

The steamer Vega, with Prof. Nordenskjold on board, has arrived at Copenhagen.

A heavy column of black smoke is issuing from one of the points of Mount Baker, in Washington Territory.

Prince Gortschakoff, the Russian Chancellor, is in a dying condition.

Personal.

Mr. Whitelaw Reid is following his predecessor's injunction to "go west," in a noble and thoroughly practical way by sending parties of homeless children to Western homes. Five parties have already gone, and the sixth, composed of ninety-five persons, started last week. Mr. Reid is aided in this enterprise by an unknown benefactor.

Mr. Matthew Arnold is fifty-seven years old. He lives most of the time in London, has been married for many years, and has several grown-up children.

The Emperor William of Germany was 83 years old on the 22d of March last. The Princess Louise has just celebrated the 33d anniversary of her birthday.

Prof. Proctor describes Miss Mitchell's astronomical work at Vassar College as fine and thorough.

Prof. R. A. Proctor, the distinguished English scientist, delivered a short course of lectures in this city and Oakland, the past month, on Astronomy.

President J. B. Angell, of the University of Michigan has been tendered the Chinese

mission by president Hayes, but preferring to remain at the University, he declined the honor. He was then offered a commission as Envoy Extraordinary to the Emperor of China, to negotiate an emigration treaty, which would not necessitate his resigning the presidency of the University. This he accepted. There are two other members of the Commission, namely, John F. Swift of San Francisco, and W. H. Trescott of South Carolina.

Educational.

Mr. Peter Cooper is enlarging the Cooper Union, at a cost of \$50,000, by the addition of another story and a dome with a diameter of seventy-five feet, to which two elevators will be running. When it is completed he proposes to establish an art gallery for the benefit of the art students of the Union.—*N. Y. School Journal*.

Hon. Neil Gilmour has been reelected to the New York superintendency. This is his third term.

A woman has just been placed in an important educational position in France. It is Mlle. Juliette Dodd, who has been appointed by M. Jules Ferry, Brigade-General for the inspection of the schools established for the inspection of little children under 6 years of age.

A reformed orthography is to be introduced into all the Prussian schools on April 1. All new school books will hereafter be printed with the reformed spelling, and no educational works with the old spelling will be used in schools after the lapse of a certain interval. The governments of Austria, Bavaria and Wurtemberg have also adopted the new spelling.

Those of us in California who believe we are extra liberal in school expenditure, should read the following:

State Auditor Sherman has been preparing a table of figures in regard to the school fund of Iowa, which shows for the year 1879 the grand total received by taxation and otherwise was \$4,031,783.15. This is an average of \$7.09 to every individual in Iowa between the ages of 5 and 21, or about double that for actual attendance.

Missouri has 8,092 school houses, at which 448,033 pupils attend. She has forty-nine colleges and seminaries, and five normal schools. Her teachers number 11,268, and receive in salaries \$3,424,408.55.

The State superintendent of Wisconsin, in a paper read before a recent meeting says that county superintendents ought to be graduates of Normal schools, colleges, a university, or hold State certificates.

The National Teachers' Association will be held at Chautauqua, commencing July 13, and continue three days.

The average length of service of Boston teachers is nearly twelve years. One lady teacher recently resigned after teaching in Boston more than forty-one years. Thirteen of the present corps have taught more than thirty years, 101 have taught between twenty and thirty years, and 268 between ten and twenty years.

About four years ago a novel plan for instructing the children of the poor in the art of housekeeping was put into operation at the Wilson Industrial School for Girls, in this city. The little girls were taught in an attractive manner, and with the aid of toy implements, to wash, sweep, dust, set the table, make beds, and a variety of other things, in a neat and thorough way. The system was known as the "Kitchen-Garden." It has gradually extended, until there are now ten or a dozen classes in this city, and others have been formed in Hoboken, Brooklyn, Boston, Philadelphia, and Chicago. Plans have also been made for establishing Kitchen-Gardens in many other cities. A short time ago a meeting was held at a private residence in this city for the purpose of organizing a "Kitchen-Garden Association," so that the principles upon which this system are founded may be improved as much as possible, and that there may be uniformity of action among those interested in it. All children seem deeply interested in this novel method of learning house-work, and last winter a class was formed in Boston from the children of prosperous families; so that it is to be hoped that those who are not poor may also share in the benefits of this system of instruction. —*Harper's Bazar.*

The report of the New York State Superintendent of Public Instruction shows that there were during the past year 1,628,727 children in the State between the ages of five and twenty-one. The number enrolled in the public schools was 1,030,041, and the average daily attendance was 570,382.

The *Neue Freie Presse* makes the following comparison of schools and school attendance in different European countries: Germany, with a population of 42,000,000, has 60,000 schools and an attendance of 6,000,000 pupils; Great Britain and Ireland, with a population of 34,000,000, has 58,000 schools and 3,000,000 pupils; Austro-Hungary, with a population of 37,000,000, has 30,000 schools and 3,000,000 pupils; France, with a population of 37,000,000, has 71,000 schools and 4,700,000 pupils; Spain, with a population of 17,000,000, has 20,000 schools and 1,600,000 pupils; Italy, with a population of 28,000,000, has 47,000 schools and 1,900,000 pupils; and Russia, with a population of 74,000,000, has 32,000 schools and 1,100,000 pupils.

The first of M. Ferry's Education Bills—that for the reorganization of the Superior Council of Education—having passed both Chambers, was promulgated on Saturday in the official journal, and now only awaits the administrative action of the minister, in nominating the members of the Council, to be put into execution. It is a measure of great importance, for it, in fact, delivers up once more the whole system of public instruction into the hands of the University of France, except so far as counteracted by the influence of such free schools and free universities as can be established and maintained by private exertion without any assistance from the state.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SAN FRANCISCO COUNTY.

There was but little accomplished by the Board at their two meetings in April. The Traylor School Bill (regulating salaries in cities of over 100,000 inhabitants), to which we referred last month, will probably be contested by president Stone and the majority on the ground of unconstitutionality. We

fail to see any good reason for the determination of the majority to spend money in a legal contest, when they claim that their whole object in reducing teachers' salaries has been to save money. The majority assert that they reduced salaries in accordance with their pledge to economize; the people to whom they pledged themselves, through

their representatives in the legislature, not only released them from their pledge, but took all means in their power, to render their release efficacious. We believe any further opposition on the part of the majority, will appear to be actuated rather by vindictiveness and petty spite than by an honest desire to carry out an ante-election promise.

On April 13th Miss R. H. Hazelton was elected regular teacher of the Laguna Honda school.

Samuel Swift was elected Chief Census Taker.

L. H. Van Schaick, H. Kimball and superintendent John W. Taylor, of the Committee on Credentials, recommended that principals of primary schools having eight classes or more be not required to teach a class. This would rescind a former action of the Board.

A minority report by N. B. Stone and J. W. Galloway recommended that the Board do not rescind the former resolution, and, also, that principals of grammar schools having twelve classes and under be also required to teach a class. This report was adopted.

Miss Hattie L. Wooll was promoted from an eighth-grade class to a second-grade in the Lincoln Grammar school. Miss Wooll is one of the best primary teachers in the department, and deserves a principalship.

It was ordered that as fast as vacancies in the evening schools occur they be filled by persons not teaching in the day schools, and the office of principal of the evening schools was abolished after the 31st of May. One teacher in the Lincoln school shall be designated to superintend the school at an extra salary of \$10 per month. In the other schools such superintending teachers shall receive \$5 per month extra.

We believe this order will ruin the efficiency of the evening schools as fast as possible. The best teachers now employed there are also engaged in the day schools. In fact these understand best how to discipline the pupils, and how to do the most work in the few hours available every evening. Furthermore, under Mr. O'Connor's conscientious and thorough supervision,

there has been some unity of work and a general progress in all the classes. How it will be under the above order, every observant teacher can tell.

The teacher who has been longest employed in the San Francisco schools, is the Hon. James Denman, present principal of the large grammar school for girls, which bears his name. Mr. Denman commenced teaching in this city in 1852, and with the exception of eight or ten years' service as superintendent, has taught continuously in the city ever since. He is not merely an able educator, but a man of original ideas and great ability.

LOS ANGELES COUNTY.

The fee and salary bill passed by the legislature two years ago, for Los Angeles county, cut down the salary of the county superintendent to one thousand dollars, and no allowance for traveling expenses. Los Angeles county is about as large as the State of Massachusetts, and contains seventy-five school districts. The law compels the superintendent to visit every district at least once a year. To do so will use up about all his meagre salary. He finds himself in a serious dilemma. If he visits, his salary goes in traveling expenses. If he does not, the Supervisors deduct ten dollars for every district not visited. The cutting down of the salary is an outrage on the public schools; and is a stroke of economy that every intelligent man condemns.

The Board of Supervisors appoint a Board of Education the 3d of May.

The citizens of Los Angeles were greatly disappointed over the failure of the Normal school project.

Miss Estella Lawrence, a school teacher, horsewhipped a prominent employee of the Santa Ana ranch, of this county, for circulating slanderous reports concerning her.

MENDOCINO COUNTY.

Ukiah City is in need of a new school-house, and the residents are taking steps towards meeting the requirement.

The Mendocino *Beacon* of April 17th, says: The public schools here will close next month, until July, unless money is

raised by subscription to continue the school during the interim.

Mr. Hackett has taken charge of the school in William's Valley.

A. H. Day is teaching in the Sherwood school; and Miss May Carpenter in the Counts; and Alice Chaplin in the Garcia District.

The public school in Ukiah opened April 5th with the same teachers as last term. (Principal Ruddock, Mrs. Kelton, J. S. Hunter, and Miss McCowen.)

Cuffy's Cove is having a new addition added to the school-house.

ALAMEDA COUNTY.

The newly appointed Board of Education of Alameda county consists of Prof. O. S. Ingham, superintendent of the schools of the town of Alameda; Joseph McKeon of Alvarado; A. L. Fuller of Oakland, and W. H. Galbraith of Haywards. County superintendent Gilson is ex-officio secretary of the body. Superintendent Ingham has been elected president of the Board.

SACRAMENTO COUNTY.

The Board of Education elected for Sacramento are, Miss McCormack, Geo. Smith, W. L. Willis, and Mr. Blanchard.

SANTA CRUZ COUNTY.

The trustees of Santa Cruz school district have decided to submit to the voters the question of a tax to support the schools during the remainder of the year.

The pupils of the Santa Cruz public schools conduct a newspaper under the title of *Leisure Hours*. There are several good writers among the high school pupils who help to render its pages spicy and agreeable.

Messrs. H. E. Makinney, J. W. Linscott, J. L. Halstead, and D. W. Trout are appointed on the Board of Education for Santa Cruz county.

MONTEREY COUNTY.

Castroville school, under the management of Mr. Wilson, assisted by Misses Auld and Sterling has closed for the term, and will have a long vacation.

Miss Rogers of San José, is teaching the Priest Valley school.

Castroville has only seven and one-half months' school this year, and at Oroville, Butte county, the school year has been only six months.

INYO COUNTY.

Inyo county is in great want of a grammar school.

Mr. Daniel Crouch, teacher at Independence, has closed the public school, and opened a private school in the public school building.

SAN JOAQUIN COUNTY.

The teachers of San Joaquin county surprised their former superintendent, Mr. Dunbar, by the presentation of a gold watch on his birthday, April 21st.

The secretary of the Board of Education, of the city of Stockton, estimates the expenses of the public schools of that city as \$35,755. Cash in hands of treasurer, \$32,750. Estimated deficiency, \$3,005.

SONOMA COUNTY.

Miss Cathella Adams is teaching the Mayacama school.

The Sonoma county Board of Supervisors have elected as the Board of Education for that county, Messrs. C. E. Hutton of Petaluma, E. W. Davis and M. Dozier of Santa Rosa, and C. L. Ennis of Sonoma.

Messrs. F. T. Maynard and N. M. Hedges have been re-elected as school directors for the city of Petaluma.

NEVADA COUNTY

The newly elected Board of Education for Nevada county consist of Messrs. Potter, Powers, Preston, and Byrne.

KERN COUNTY.

Mr. C. Lindsey has closed his school at Kernville, and has taken charge of the Tehachepa school.

PLACER COUNTY.

The following are the newly appointed Board of Education for Placer county: J. M. Lowell of Auburn, S. J. Pullen of Roseville, H. C. Curtis of Rocklin, and A. O. Daman of Colfax.

Mrs. Haile has resigned her position as

teacher in the intermediate department of the Dutch Flat public school, and Miss Belle May has been appointed to that vacancy.

MERCED COUNTY.

At a special meeting of the Board of Supervisors for Merced county, R. Gracey, Mark Howell, L. D. Stockton, and James E. Hicks were appointed to act in conjunction with superintendent Dixon, and constitute a Board of Education.

CALAVERAS COUNTY.

The Board of Education appointed for Calaveras county are, F. H. Day, E. F. Floyd, E. F. Walker, and C. R. Beal.

SAN BENITO COUNTY.

The new Board of Education for San Benito county are, George Vorcoe, A. Martin, S. T. Black, and W. H. Housh.

YUBA COUNTY.

Miss Eva Perkins lately of the Yuba city school has taken charge of the Lime Kiln school of Nevada county.

BUTTE COUNTY.

The fine school-house at Biggs is to be supplied with a good-sized bell.

SISKIYOU COUNTY.

The Yreka public school closed March 26th.

Mrs. H. L. Denny has taken charge of the Indian Creek school.

The school at Mugginsville is in charge of Mr. A. M. Evans.

EL DORADO COUNTY.

Rev. C. C. Pierce was elected city superintendent of Placerville, April 20th.

SANTA CLARA COUNTY.

A. Madan has been re-elected superintendent of schools in the town of Santa Clara.

SOLANO COUNTY.

Miss Lizzie Ferguson of Dixon, has taken charge of the Maine Prairie school.

Fremont district school-house was rescued from destruction by fire, by the extra exertions of teacher and pupils.

The new Board of Education for the city of Vallejo, held their first meeting April 5th. The Board consists of A. J. McPike

superintendent, as chairman, and Messrs. J. E. Pettis, James Topley, D. Rutherford, and C. F. Hubbs.

The County Board of Supervisors will in May hold their session, at which time a Board of Education will be appointed, to consist of five members, with the superintendent of schools as ex-officio member. Among the teachers available to go on this Board the following have been mentioned: J. K. Bateman, J. T. Wallace of Dixon, Prof. C. B. Towle, and G. C. Richards

Miss Gilman, of the Vallejo public schools, has been sick with pneumonia the past month.

The public school in Toland district opened Wednesday, April 7th, under the charge of its former competent and wide-awake teacher, Mrs. H. Frank Pray. The district is very pleasantly situated in the Montezuma Hills on the Sacramento river, in the north-eastern part of Solano Co. It has one of the largest and best country school-houses in the State. The building together with its furniture (all of the modern style), and five acres of ground was a donation from the late Dr. Toland of San Francisco. The building has, during the past vacation been moved to its present site, and is now in the center of the district. A fence is now being erected, and trees planted. Mrs. Pray, formerly Miss Mattie J. Peckham of San Jose, now a resident of this district is a thoroughly competent teacher, a graduate of the Normal School, and has for several years been connected with the schools in this section. She is deeply interested in the cause, and has lately received a life diploma, which she is fully worthy to hold.

SAN MATEO COUNTY.

The pupils connected with Redwood City public schools, conduct two papers.

Mr. W. E. McIntyre has charge of the San Pedro school.

The Alpine school begun March 22d, under the management of its former teacher, Miss Alice Wood.

The Searsville school district contemplates forming two separate districts.

SAN DIEGO COUNTY.

In a recent examination, the pupils of the schools of San Diego city, acquitted themselves very creditably. The class of Mrs. Cronyn showed particular proficiency, not only in the studies prescribed on the State course, but in one more important, if less commonly taught—*i. e.* bread making. It seems that prizes had been offered for the best made light and brown bread, and after the usual closing exercises of Mrs. Cronyn's class, her pupils gave a "bread test." A committee of experienced matrons awarded the prizes, four in number, as follows: first prize, Katie Stewart; second—Minnie Wal-

lace; third—Ada Edwards; and fourth—Frank Crowell. We commend this item to the particular attention of teachers who believe in practical education.

YOLO COUNTY.

Messrs. A. M. Ayers, F. A. Pedlar, J. L. McConnell, and George Banks were selected to act with county superintendent J. W. Goin, as the Yolo county Board of Education.

LAKE COUNTY.

The new Board of Education for Lake county are, Messrs. C. A. Cooper, G. W. Wilson, W. J. Biggerstaff, and J. W. Connolly.

NEVADA.

HENRY F. BAKER, Editor, Virginia City.

Mrs. E. S. Kendall of Oakland, has recently been appointed to the position of assistant principal of the Gold Hill High School. She is spoken of as an active teacher of long experience.

The Storey county Teachers' Institute called for April 24th has been postponed for one month on the rumor that several of the San Francisco principals intended to make a visit to the Comstock at that time.

The Carson school trustees abolished their kindergarten school on the ground of economy, and the people remonstrated in a petition praying for its re-establishment. In answer to the popular demand, the trustees have re-opened the school in charge of Miss O. Babcock.

Silver City and Dayton are going to vote on May 1st upon the proposition to raise a special tax of \$1200 in each town to pay running expenses of the schools. Gold Hill also desires to raise an extra tax of \$12,500. There is not a school fund in the State that is in a healthful condition. The decrease in the bullion yield over that of former days has rendered rigid economy a necessity.

Miss Libbie Salkeld, for three years the efficient assistant principal of the Gold Hill

High School, was recently married to M. N. Stone, a prominent lawyer of Virginia.

The Gold Hill and Virginia schools use three and four sets of readers in the primary grades. More interest is taken in giving primary instruction of the right sort than ever before.

The half-day system recently inaugurated in the Virginia primary schools is a success, thanks to C. S. Young, the county superintendent, who was the first to advocate its adoption.

The first meeting of the Storey County Teachers' Association was held Saturday, April 24th, every teacher in the county being present. Grade matters as affecting Gold Hill and Virginia City were discussed at length by Miss Ida Lynch and Miss Georgie Wright of the former city, and Miss Ada Ellis, Miss Hattie May, and Miss Julia Michelson of the latter. C. S. Young of Gold Hill and H. F. Baker of Virginia read essays on "Uniformity of Grade," and "Teaching too Much," respectively. The Association promises to be a permanent organization. It is proposed to make the meetings monthly, their object being to arrive at some uniformity in methods and matter in the schools of the county.

BOOK NOTICES.

From Davis, Bardeen & Co. of Syracuse, N. Y., we have received A THOUSAND REGENTS' QUESTIONS ON ARITHMETIC, proposed by the Regents of the University of the State of New York, for State examinations from 1866 to 1879.

This is the most complete and best list of questions on the subject we have seen. They are printed on cards for distribution, and also collected in a little pamphlet, with answers. Price, one dollar.

HOW TO SECURE AND RETAIN ATTENTION.

By J. L. Hughes, Superintendent of Public Schools, Toronto. W. J. Gage & Co. Toronto, publishers. Price, 50 cents.

This is an excellent little manual, which will be as serviceable as a mere book can be, in aiding teachers to secure the *sine qua non* of education.

The author has evidently a clear idea of his subject, he presents it, consequently, in a concise, systematic, and effective manner. We know of no better way in which a teacher can invest fifty cents, than in the purchase of this book.

PROGRESS AND POVERTY. By Henry George. New York: D. Appleton & Co. San Francisco: J. T. White & Co.

"Progress and Poverty" is a work which marks an epoch in social science literature. It is not often a man may be a prophet in his own country—Mr. George will undoubtedly be regarded here at home as a great thinker—as well as a master of terse, vigorous, Saxon-English.

It is difficult with the brief space at our disposal, to do justice to a book to a review of which the *Popular Science Monthly* for April devotes its leading article. We will, briefly, refer to its central idea, and commend it to the careful perusal of every man and woman interested in the welfare of the race.

The book is a scientific treatise on political economy. It treats of the relations of labor and capital, of capital, and of credit. But it is in investigating the causes of poverty and destitution, in comparing the enormous disproportion between the lot of the poor and of the very rich, that the author rises to the height of his subject. Here his investigations have been deepest, his authorities most carefully sifted, his reasoning most logical. He determines that the great evil of modern civilization is the holding of land in large masses by individuals. He claims that land belongs to mankind in common, and that the individual is entitled only to as much as he can profitably use without infringing on the equal right of his fel-

lows. Mr. George's remedy for this land monopoly is land taxation. He believes and offers a clear, concise, formidable argument to prove that by taxing land, and exempting improvements, the evil must inevitably be broken up.

"Progress and Poverty" to be understood and appreciated, must be carefully read. We recommend it to our readers.

LITERARY NOTES.

The *Atlantic Monthly* for May contains two serials, both of considerably more than ordinary merit. The first is "The Stillwater Tragedy" by Thomas Bailey Aldrich; the other "The Undiscovered Country" by W. D. Howells. Willard Brown contributes an article of especial value to teachers, "The Examination System in Education."

The *May Popular Science Monthly* is even more than usually interesting. In fact, this journal is now better than ever before. No student can afford to be without it. Among the articles in this number are, "Climate and Complexion" by J. M. Buchan, M. A.; "The Carbon Button" by E. A. Engler, A. M. (Illustrated).

The *May Harper* is full of beautiful illustrations. The motto "Excelsior" evidently animates the conduct of this magazine. Every succeeding number appears more attractive than its predecessor. The principal articles in this number are Henry Van Dyke's "Red River of the North;" "Old Catskill" by Henry Bruce; Mrs. John Lillie's "Music and Musicians in England."

The contents of *Appleton's Journal* for May are as follows: "Senior's Conversations," selections from "Conversations with Distinguished Persons during the Second Empire, from 1860 to 1863," by the late Nassau William Senior; "The Return of the Princess," from the French of Jacques Vincent—Part Third (concluded); "Metternich;" "Henry Regnault;" "The Philosophy of Drawing-Rooms;" "Monsieur Francois," by Ivan Tourguenief.

The *May Lippincott's Magazine* is a finely illustrated and readable number, stronger in general literature than in fiction. The table of contents includes, "Richfield Springs" by G. Pomeroy Keese. (Illustrated.) "Summerland Sketches"—Chapter XI; "The Backwoods of Guatemala" by Felix L. Oswald. (Illustrated); "Adam and Eve,"—a Novel, by the author of "Dorothy Fox." "Studies in the Slums."—No. 1; "Water Street and its Work" by Helen Campbell.

Almost every branch of literature is represented in the *May Scribner*. Mr. E. C. Stedman has a study of Edgar A. Poe, accompanied with a fine portrait; in history we have Eugene Schuyler's "Peter the Great;" in fiction there is Mr. Cable's powerful and original novel, "The Grandissimes," and the conclusion of Mrs. Burnett's "Louisiana."

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CAUSES OF ANOMALOUS DISTRIBUTION OF
RAIN ON THE PACIFIC COAST.

NUMBER THREE.

BY PRESIDENT JOHN LE CONTE, LL. D.

[University of California.]

APPPLICATION TO THE DISTRIBUTION OF RAIN.—The general physical considerations which have been enumerated, afford a satisfactory explanation of the several features of the abnormal distribution of rain along the Pacific Coast.

(1.) Increase of rain-fall with increase of latitude. It is evident, that as we go north along the coast, the temperature of the surface-waters of the ocean (the vapor-furnishing apparatus), through the influence of the *Kuro-Siwo* is rendered comparatively warm; and at the same time, the temperature of the land (the condensing apparatus), especially during the winter (the rainy season), diminishes with increasing latitude. Hence, during the rainy season, or winter months, this cause must tend, as we advance towards Alaska, to progressively augment the excess of the temperature of the ocean above that of the adjacent land,—the vapor-furnishing source above that of the condensing apparatus—

and thereby increase the amount of precipitation along the northern portions of the coast.

(2.) **SUDDEN INCREASE OF RAINFALL NEAR LATITUDE 41° .**—This is a striking, but very puzzling fact. We are not yet prepared to offer any satisfactory explanation of it. So far as we know, there are no observations indicating any sharp and sudden depression in the temperature of the ocean-waters just at Cape Mendocino. A careful study of the directions of the winds at this portion of the coast might throw some light on this point.

A most important agent in the production of this anomaly in rainfall, is, doubtless, to be found in the hygrometric relations of the land lying west of the Sierra Nevada mountains, to the contiguous sea. The crowding of these lofty mountain ranges towards the shore line, which occurs just north of Cape Mendocino must, evidently, tend to augment the rainfall at this portion of the coast. The following numbers indicate, approximately, the distances of the crest of the Sierra Nevada from the shores of the Pacific ocean :

At latitude 39° along the parallel, 190 miles ; at latitude $40^{\circ} 30'$ (Lassen's Peak), along the parallel, 140 miles ; at latitude $41^{\circ} 30'$ (Mt. Shasta), along the parallel, 94 miles.

(3.) **NO SUMMER RAINS BETWEEN LATITUDES 33° AND 41° .**—This remarkable feature of the climate of this coast, is clearly due to the excess of temperature of the adjacent land, during the summer, above that of the cool ocean on the west. This condition of things, while it augments the force of the west winds, renders the precipitation of the aqueous vapors of small tension which they sweep from the cool ocean to the hot interior, a physical impossibility, since they are being carried to a region of higher temperature.

Further north, along the coasts of Oregon, Washington Territory, and Alaska, the presence of a comparatively warm ocean, renders the conditions more favorable for summer rains.

(4.) **WINTER RAIN SOUTH OF LATITUDE 41° .**—Along this portion of the Pacific coast, in consequence of the abnormal coolness of the ocean, the adjacent lands, even during the winter season, scarcely ever become colder than the contiguous sea. At this season of the year, while the monsoon features of the winds of this section of the coast disappear, yet, we have presented the anomalous fact, that when the winds blow from the ocean it never rains. This is evidently due to the low temperature of the sea, which can only furnish vapor of feeble tension. The three rain-bearing winds come from the south and the south-east, bringing the warm vapors of high tension from the Gulf of California. These vapor-laden warm south-east winds from the region of the Gulf of California, and the western coast of Lower California, deposit a very small amount of rain in the warm latitude of San Diego (33°), but precipitate their moisture gradually more and more copiously on their way to the higher and colder latitudes. It is a well-established fact, that near San Francisco during the rainy season, whenever the wind veers to the west, and blows from the cool ocean, the rain speedily ceases, and it clears off. Further north along the coast, where the influence of the *Kuro-Siwo* is felt, the sea winds during winter, re-

sume, to a greater or less extent, these normal functions, and become rain-bearing winds.

(5.) LESS RAIN IN THE VALLEYS THAN ON THE COAST.—This is the normal condition of things, since it is evident that the interposition of the Coast Ranges must tend to cut off more or less of the vapors from the interior valleys.

(6.) MAXIMUM RAINFALL ON THE WESTERN SLOPES OF THE SIERRA NEVADA.—After the vapor-bearing winds have passed across the Coast Ranges and the great valleys, they reach the western slopes of the Sierra Nevada mountains. This high mountain range, and its cold snow-clad sides acting as powerful condensers, extract from the southerly winds the load of moisture which they bring from the regions of maximum evaporation in the Pacific ocean. This burden of moisture is almost entirely unloaded in passing over the land lying to the seaward, and especially over the cold flanks of these lofty mountains; so that comparatively little is left for deposit on the arid plains of the Great Basin. On the western slopes of the Sierra Nevada we find a precipitation, which,—following the usual law for windward mountain flanks—augments with increasing altitude, and attains a maximum at about from 5000 to 7000 feet.

WHEN WE WERE CHILDREN.

BY GEORGE GOSSMAN, A. M.

[From H. Heine.]

MY child, we once were children,
Such two you never saw :
We crept into the hennery
And hid beneath the straw.

We crowed like ancient roosters,
At all the passers-by,
Kee-ker-e-kee! and they thought
They hear the roosters cry.

We turned up empty boxes,
And made us papered rooms,
And then we lived together
Within our cosy homes.

Our neighbor's cat would often
Come in to make a call,
And then we'd bow and courtesy
With compliments to all.

We'd ask all sorts of questions,
Omit the health of none ;
And ask to be remembered
As since we've often done.

Like old folks we sat talking
Of how we used to do ;
And how the people now-a-days
Were not so good and true.

How faith and truth had vanished
From off this mundane sphere ;
How money was hard to get,
And coffee was so dear.

Those good old times have vanished ;
And so the plays of youth ;
And vanished has the money
With goodness faith and truth.

THE AMERICAN SUEZ.

THE American Suez is not a short neck of land like the connecting link of the eastern continents, but a vast triangle, tapering like the neck of a giraffe, and with its countless excrescences and indentations stretches from the mouth of the Chimalpa to the Gulf of Darien, a length of about fifteen hundred geographical miles. A glance at the map will show that a little below the ninth degree of northern latitude, two opposite indentations so nearly bisect the continent that the *prima facie* advantages of that point appear very considerable, the distance from ocean to ocean across the Isthmus of Panama being only forty miles.

But a chart exhibiting the results of the soundings along both coasts, and of the altimetrical surveys in the interior of the country, would also show that as the continent contracts, the mountains become lower and the sea shallower, just as if the convulsions of a volcanic catastrophe had clogged the ocean with the débris of former mountain-chains. For perhaps analogous reasons we find that in the Mediterranean high mountains and deep seas go together: Southern Europe and Northern Africa abound with good harbors, except on the shores of the Campagna and of Eastern Tunis, where the land is low and sandy. The best engineers who have surveyed the harbors of Central America—Chevalier, Lieutenant Bailey, Commander Lull, etc.—agree that the difficulties of the construction and preservation of a *marine canal*—i. e. an artificial roadstead through a shallow harbor—made all terra-firma obstacles appear trifling in comparison; and if the sierras of Tehuantepec were interrupted at any single point, the practicability of the work would probably be in inverse ratio to the shortness of the distance, for the harbors of Tehuantepec are the finest, and those of Panama the worst, between Vera Cruz and South America. But the northern Isthmus is traversed by three uncompromising mountain-chains of hornblende rocks and syenite—too hard to be tunnelled and too high to be surmounted, except at an outlay which could only be refunded by the toll-monopoly of the greatest international highway of the world.

There remains a region which, being half intersected by a great lake and blessed with deep coast-waters, unites the advantages of Panama to those of Tehuantepec, but whose superior claims, though often acknowledged, have not been sufficiently urged, except by foreign capitalists, the Nicaraguan government, since its quarrel with Great Britain in 1848, having been somewhat seclusive in its domestic policy.

Let us now consider the pro and contra arguments in detail.

The distance from the Bahia de Limon (Navy Bay) to the mouth of the Rio Chepo in the Bay of Panama is about thirty-eight miles in a bee-line, but, following the windings of the Rio Chagres as far as San Pablo, and avoiding the heights of Las Cruces by a détour to the south-west, the length of the proposed canal would be about fifty-four miles. The summit-level between the two oceans (fifteen miles south of Las Cruces) is hardly one hundred and sixty

feet, and the nature of the ground is, on the whole, very favorable to excavations, the surface-strata being a gravelly alluvium and sandy loam, with a few veins of basaltic tufa, which the Pacific Railroad crosses between Barbacas and San Juan Obispo. The unhealthiness of the climate has been greatly exaggerated, and if the canal were once completed the periodic insalubrity of a strip of coast-jungles which a ship could pass in three-quarters of an hour would hardly deter sailors who disregard the less imaginary dangers of Para and Vera Cruz. The Isthmus of Panama enjoys a noteworthy immunity from physical and political earthquakes, the low hills of Las Cruces and Gorgona are innocent of volcanoes, and the government of New Granada has rarely joined in the brawls of the neighboring republics. The difficulty of maintaining an army of laborers in the heart of a tropical wilderness would be greatly lessened by the railroad and steamboat facilities of the Isthmus, the American warehouses and the acclimatized foreign artisans, surveyors, physicians, etc. in Panama and Aspinwall.



MAP OF THE PROPOSED PANAMA ROUTE.

But these advantages are offset by a very serious objection. It is a desideratum of primary importance that the projected canal, whenever executed, shall be navigable from sea to sea by sailing vessels of a large class, and that its termini shall offer a safe and commodious entrance in all kinds of weather. But in Panama the anchorage is at a considerable distance from the shore; ocean-steamers have to stop at the islands of Perico and Flamenco, three miles from the railroad wharves; and Aspinwall, the best harbor the surveyors of the railroad could discover on the Atlantic side, stands itself on an island, the Isla de Manzanillo, and large vessels have to discharge their cargo at the outer extremity of a coral reef twelve hundred and fifty feet in length and very dangerous of approach in stormy weather. The "Technical Commission of the United States of Columbia" proposes to improve the channel of the Rio Cha-

gres by diverting its head-waters into a separate canal, but the harbor itself has its most dangerous shallows near the mouth of that river; and in dry seasons the bar can be passed only by flat-bottomed tugs.

A ship canal across the Isthmus of Panama would therefore require as a supplement on both shores a *marine channel* from three to four miles in length, protected by stupendous levees, jetties, and breakwaters, while its entrance, after all, could in rough weather be approached only by steamboats; and the Caribbean Sea is, unfortunately, the most tempestuous portion of the Western Atlantic. The Bay of Panama, on the other hand, is getting shallower from year to year, owing to the accumulating alluvium of the Grande and Chepo rivers, drained from a country which the activity of the railroad woodchoppers is fast converting into a region of sandhills. The Russians have had the same experience with their harbor of Kertsch on the Black Sea. The town was declared a free port in 1827, a free lazaretto and extensive wharves were built in the hope of attracting a large traffic, but all in vain: the quarantine regulations compelled a certain class of vessels to call at the port, but the harbor can only be reached through a narrow roadstead in the Strait of Yenikale, and no shipmaster will brave the dangers of the passage in stormy weather.



MAP OF THE PROPOSED TEHUANTEPEC ROUTE.

The Isthmus of Tehuantepec is recommended by its genial climate, its fertility and its accessible coasts. Cortés, after the conquest of the Mexican empire, selected for himself on the highlands of this Isthmus the estate from which he derived his title as marquis, and travellers in Southern Mexico vie in extolling the beauty of a region which combines the eternal spring of Madeira with the arboreal wealth of the Amazon Valley. The mouth of the Coatzacoacos (properly Huatsacolgos) is six hundred yards wide, with never less than sixteen feet of water on its bar; and the narrow estuary of the Chimalapa could be easily connected with the Laguna Superior, a deep and commodious

basin with a good anchorage close to the land. A great deal has been said about a supposed difference in the levels of the Atlantic and Pacific. The truth seems to be, that in the Pacific, where the equinoctial tides prevail, the sea rises and falls about twenty feet, while the western recess of the Gulf of Mexico, like the Adriatic, is almost a tideless lake, so that the Bahía of Tehuantepec is alternately higher and lower than the Bay of Vera Cruz. The direct distance between the two seas is here about one hundred and thirty miles, and the lower twenty leagues of the Coatzacoalcos are navigable for all but the largest vessels, and could easily be deepened by dredging-machines and jetties; but west of that the river becomes a continuous cascade, and the Sierra de Soconusco interposes its triple rock-barrier, three uninterrupted mountain-chains, each of which has to be separately tunnelled or scaled—easier said than done, the lowest pass of the main range, the Portello de Tarifa, being at least seven hundred and fifty feet above the level of the Pacific. De Moro, the zealous advocate of this route, speaks of one hundred and eighty locks *via* the bee-line, or one hundred and fifty by way of the Tabasco River; and colonel Rochez, who surveyed the shorter route four years ago and puts the probable expense at eighty million pesos (eighty-three million dollars), omits from his calculations such weighty items as shelter-houses for the laborers and surveyors and the construction of an artificial reservoir with force-pumps if the water-supply on the summit-levels should prove inadequate. The real cost would probably not fall much short of the threefold amount. It is a pity, for Tehuantepec would be one thousand miles nearer to New Orleans than the mouth of the San Juan and fifteen hundred miles nearer than Aspinwall.

We come now to the long-projected Nicaraguan Canal, which would in all probability have been begun thirty years ago if the negotiations had not been unhappily interrupted by the crisis of the British embargo. The breadth of the Isthmus measured due west from the mouth of the San Juan, is ninety-five miles; obliquely from the same point to the Bay of Fonseca, two hundred and eighty miles. But nearly two hundred miles of the space between the two last-named points are occupied by the lakes of Nicaragua and Managua and the navigable portions of the San Juan river, so that the proposed canal may be said to be more than half made by the hand of Nature. Beginning with the Atlantic section, we find that San Juan reaches the sea by three channels—the San Juan proper, the Taura and the Colorado. The town and harbor of San Juan de Nicaragua are at the mouth of the first-named channel, now the shallowest of the three, since the great flood of 1848 turned the main current of the river into the Colorado branch, whose mouth is within the territory of Costa Rica. In the four driest months of the year the Colorado has now from twelve to eighteen feet of water on its bar—in the rainy season, from eighteen to twenty-five, and even thirty feet. The San Juan receives two large tributaries, the San Carlos and the Serapiquí, both rising in the highlands of Costa Rica, and up to the mouth of the San Carlos the Rio de San Juan is navigable for vessels of twenty feet draught. A few miles above the junction a ledge of limestone rock forms a natural dam across the river, and would require the construction of the first lock, the fall of the rapids below that point being about

fifty-five feet above Managua and one hundred and forty above the Pacific, the difference of eighty-five feet representing the height of the lake above the ocean. In the midst of this plain stands the city of Leon, one of the two capitals of the republic, and from the flat roof of its cathedral the waters of the lake and of the ocean can be seen at the same time—a proof (since the height of the building is only sixty feet) that the slope must be gradual and very uniform. A straight line from Lake Managua to the south-eastern corner of the Estero Real would make the artificial section of the canal about forty miles (eight miles less than at Panama); and here all difficulties end, for the Bay of Fonseca has, next to Acapulco, the finest harbor on the Northern Pacific. Ten years ago the port of Realejo, twenty miles farther south and fifteen miles nearer to the lake, would have served all main purposes! but a singular fate has befallen its once excellent coast-waters: the mangrove-swamps of the Rio Telica have spread their jungles along the coast, and, like a vegetable coral reef, a thick wall of tanglewood now obstructs the formerly best landing-places. The Bay of Fonseca must therefore be our first choice.

The cost of the work* has been variously estimated at from fifty to eighty million dollars. If we cannot come to terms with the Costa Ricans, who hold the Colorado channel, we shall have to send captain Eads to San Juan, and the last-named figures would probably represent the correct estimate. At any rate, Nicaragua is our Hobson's choice if we want a canal for sailing vessels, for the writer of this, being thoroughly familiar with the topography of Tehuantepec, does not hesitate to say that on the northern Isthmus the sierra section alone would require an outlay of two hundred million dollars.

The Panama Canal, if ever completed, will at best be only a steamboat route, but even this would no doubt confer great benefits on the country through which it passed, as well as on the passenger-lines between California and Central America; and the arrival of M. de Lesseps at Panama City is a guarantee that the question of cost will now be definitely settled. The improvement of the Chagres River has already been determined upon, and operations upon the land-canal will not be postponed much longer unless the difficulties of the preparatory work should greatly task the available resources.

In Nicaragua there exists no reason for any delay whatever. Colonel Childs's and commander Lull's surveys have removed all apprehensions about the most doubtful section of the route, the solitary llanos between Lake Managua and the Pacific. At the mouth of the San Juan we have the choice between three channels, two of which need little, if any, improvement. Moreover, both Costa Rica and Nicaragua, though not on the best terms with the European powers, are friendly disposed toward the United States, to whose protectorate one, or perhaps both of them, owed the preservation of its national independence. If we should decide upon the Colorado mouth, we might obtain

*According to Baron Lesseps, the dimensions of the canal should be at least twenty feet in depth by a width of one hundred and twenty feet at the top and forty at the bottom. Assuming that many circumstances would combine to raise the rate of expense to one and a half to one and three-quarter times that of the French-Egyptian average, and taking the Suez Canal as our standard of comparison, the maximum cost would probably not exceed eighty-five million dollars,

the formal sanction of the Costa Rican government: if we should prefer to reclaim the harbor of San Juan—which might, on the whole, be the best plan—we could do it without considerable outlay by widening the channel of the river below the divergence of the Colorado. But whatever can be done should be done soon.—*Lippincott's Magazine.*

SUCCESS IN TEACHING.

“ Oh ! let not then unskillful hands attempt
To play the harp whose tones, whose living tones,
Are left forever in the strings.”

WE do not mean that only the skilled teacher shall be employed, for at present we deem that impossible; but we would ask trustees to employ those who evince higher qualifications than the ability to draw low salaries. Scholarship alone is not sufficient; there must be a natural adaptability for teaching united with the ability to labor both late and early, out of the school as well as in it. The sickly or lazy teacher cannot expect success. The teacher who hopes to teach successfully must be a close student of human nature, watching the mental characteristics of each pupil, noting who needs repressing and whom it will do to stimulate. The teacher must be prompt, active, energetic, ready to take hold of any difficulty that presents itself, fearless of ill-will and able to readily substitute one plan if another fail. She must be, or at least ought to be, neat in dress, polite and affable, studious in habit, and read up in all that relates to her profession. Addison says, “What Sculpture is to the block of marble, education is to the human soul.” Therefore, keep constantly in mind the ideal scholar, the perfectly educated pupil, and endeavor to reach that standard.

Better failure from high aims than success from attempting the low and easy. Wake up your pupils by every means in your power—except a stick—stimulate them to think, read, examine, and study for themselves. Educate not simply the mind, but the body and soul as well, for “whatsoever a man soweth that shall he also reap.”

Make out a programme, but don't stick to it as closely as varnish to the paint; give yourself room to experiment a little. Above all things to merit success, visit other schools, and don't fail to read the educational magazines. Don't be afraid of telling your plans to others.

“ Teaching we learn, and giving we retain
The birth of intellect.”

For all the poet has written,—

“ Delightful task !
To breathe the enlivening spirit, and to fix
The generous purpose in the glowing breast.”

We have found more real hard work than pleasure in teaching, and can hardly think any one ever teaches for the love of teaching. In your work strive to aptly illustrate the hidden points. Cultivate a cheerful countenance and avoid scolding. Try to obtain right views of education, and read the best writers on school work. Prepare yourself for every lesson, and encourage your pupils by a smile or an approving word, for a kind word like mercy, "is twice blest; it blesseth him who gives and him who takes."

Remember above all that while many things contribute to success, yet *hard work* is the surest method of accomplishing the desired result. B.

PEDAGOGIC PERCOLATIONS.

BY AURELIA GRIFFITH.

[Principal Union Primary School, San Francisco.]

THE progressive spirit of our new superintendent, Mr. Taylor, has encouraged individual effort in many directions. There is a sense of the certainty of just appreciation that fosters progress, and though the entire result may never be known, even to the head of the School Department, it nevertheless, is as certain as that the warmth of the sun gives life and color to vegetation.

For years more progressive Departments of Public Instruction (more progressive because not bound by politics), have provided special facilities for teaching little children, while San Francisco has been content to leave such instruction to the almost unassisted efforts of the teachers. Great praise is due them for the manner in which they have sought and practiced the best methods; yet without means that money alone could provide they have not realized their highest hopes.

Mrs. Craven, principal of the Powell Street Primary School, has prepared and secured the introduction of cards containing the most common words. Only one word is given on each card, first in printed letters, and beneath the printed word is the same in script. Thus the child will learn both forms at the same time, and possess the script in the proper size and position for an exact copy.

A meeting of principals was called April 17th, by the superintendent, who wisely concluded they knew more about their business than he did. At least he recognized that in a "multitude of counselors there is wisdom."

If we do not now have a sensible course of study, it will be the fault of those who, supervising and teaching in all the grades, ought to understand just how much may be done without overtaxing our young children. It is a fearful thing to hear that some brave young life has been lost from overstudy. Yet we have heard it, and may hear it again, unless common sense rules those who teach, and those who order what shall be taught.

It is sad to see the worn tired faces of some teachers whose ill-advised enthusiasm makes them work themselves, as well as their pupils, beyond their

strength. Right here, I would respectfully suggest that some of the most prominent educators make a great mistake in advising young teachers to always stand in the presence of the class. If a teacher cannot control pupils while occupying a seat before them, she cannot while standing. As well insist that she must raise her voice as her person. True psychological control does not lie in the parade of physical power, but in that spiritual force projecting itself as noiselessly, yet as surely, as the fragrance of the flower. Psychology is not understood even by the most advanced students of mind, but while they humbly confess their ignorance, and patiently search for light, too many sneer at man as a spirit, or carelessly treat humanity as a mere machine.

How much nervous poison is distilled by the overworked teacher, is never considered by those who lay down iron rules that ignore physical delicacy. Yet with proper advice and care, these same young teachers would give out a subtle sweetness of spirit that would baptize each child with divine love. As dew-drops touch and blend by the breath of Heaven, swaying the flowers that carry them, so would the whole class learn to be loving and generous toward one another and toward the teacher who by word and deed, look and essence of true goodness, touches and brings to a living flame, the divine spark in each human soul.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[San Diego County.]

CHAPTER XI.—WHAT TWO VISITORS SAW IN A HALF HOUR.

THE judge and John Dean had been visiting the school at Los Alamos, or the Cottonwoods, as it was more frequently called; and having staid there a whole half-hour, and put his name down in the school register as county superintendent, the judge now felt that he had done his official duty to that district.

“The teacher seems to be a pleasant sort of a fellow,” said the judge, “I noticed he made the scholars mind when he spoke to them, and though we only heard one reading class, that one did pretty well, and we have no reason to think the other classes might not do as well.”

“Was that all you saw?” inquired John.

“Well, yes, pretty much all,” replied the judge. “What did you see?”

“Oh! several things which I suppose unprofessional eyes would not be likely to notice.”

Now this was touching the judge’s self-love in a tender spot, for having visited four or five other schools before this one, the judge had begun to think he understood the art of visiting schools about as well as anybody could. So

he "rather thought that his eyes were as good as his neighbors," and somewhat ironically begged to know "some of the things so plain to a professional eye."

"The first thing I noticed," said John quietly, "was the very bad air which greeted me as the school-room door was opened. Twenty pupils had been breathing and re-breathing that air, until it was loaded with impurity. The windows were closed, the door kept shut, and the room was really sickening to one who had just come in from the pure fresh out-of-doors. Then I noticed the teacher's dress. His pantaloons were guiltless of suspenders, his boots, of blacking. His finger-nails were dirty, and untrimmed; his collar hung by one button and looked as if it should have been changed a week ago. His fingers and his lips held the ink that should have gone upon a pen-wiper, while his shirt plainly showed that he had had soft-boiled eggs for dinner."

The judge acknowledged that the teacher was not so neat in his dress as was desirable, but claimed that his teaching did not depend upon his personal appearance.

"A teacher should be an example to his pupils," said John. "The neatness of the teacher is reflected by the pupils, and carelessness in one direction, is not unlikely to lead to carelessness in another way. The room was not kept in order, and I more than suspect that the training of the pupils was just as bad. Desks were covered with ink spots, books were scattered about, though they had a good library case at hand. No programme was before the pupils, and I noticed the teacher seemed to be in doubt as to what lesson he should hear the first thing in the afternoon."

"I remember his telling a pupil that he had better study the geography lesson, as that might come next," admitted the judge.

"Yes, and when, in the middle of the recitation of the reading class, a pupil came up to the teacher to be shown where Lowell was, the teacher interrupted the recitation, slowly hunted up the place by running his finger over the map, and said 'There it is, right in that corner of—(another glance at the map) of Massachusetts.' When the boy returned to his seat he intentionally trod on the toes of two small boys, pinched the arm of another boy, and tumbled heavily down into his seat, to spend the next ten minutes in utter idleness."

"You can't expect that such boys will keep from being mischievous and idle especially when there are visitors," said the judge, offering the same old excuse he had heard so many times from teachers.

"I think that many teachers, who give that excuse to account for a disorderly school, really suppose their pupils do behave worse when there are visitors, but I don't believe it is so. The teachers magnify little troubles at such a time, and perhaps awake to faults of conduct which they had not before perceived. Their every-day training or lack of training is bound to show, however. Did you not notice how the little boy that sat near the teacher motioned to him to be quiet. The child expected to receive a blow, or I am no judge of child-nature. Besides, the end of the whip which stuck out from behind the black-board didn't seem to show a reign of moral suasion."

"Spare the rod and spoil the child," quoted the judge.

"That shows what people in those days knew about training up children. No doubt the one who first said that, had felt the lash many a time, and it is so natural to think a method which made us what we are, must be an excellent one. Then you remember the boy that got scolded for letting his book fall upon the floor. The boy beside him purposely knocked the book from his hand, and the lad was publicly scolded for what was in no sense, his fault."

"The boy should have explained the matter," asserted the judge.

"And been called a tale bearer? No, the teacher should never punish until well assured that it was the intention of the pupil to do what he knew to be wrong. Then, a reproof given in a mild tone of voice, would have been much more effective than the loud harsh tones that were used. Again, the girl that asked for a drink and was denied, repeated the request five minutes afterward, and got the drink. What ideas of the stability of government could be got under such management?"

"I suppose I will have to acknowledge that the government was bad, but the teaching—what I call teaching—what fault could you find with that?"

"I did n't think much of his methods of teaching arithmetic," said John quietly.

"Arithmetic! arithmetic!" said the judge, in surprise. "We saw no arithmetic class."

"Why, the board was full of examples; and there were some with mistakes in the work and correct answers; and others, where the answers were not in the books, had wrong answers upon the board. It is so much easier to get the right answer if you know what it is. I noticed that none of the examples were original, but that all came from the book, and that is very unwise. A boy who sat near me was working in division of fractions and could not subtract correctly, and had thumbed the leaf that contained the multiplication table so many times that it was a puzzle to me how he could tell what 7×8 was, through all the dirt."

"He said that he gave a lesson in natural history once a week," remarked the judge.

"And has plenty of specimens in the school-room with which to illustrate his lectures," added John with a good-humored laugh. "I noticed quite a variety of spiders upon the walls, and one of the pupils had quite a collection of hemiptera in all stages of development, from the humble nit to the full-grown *pediculus capitis*. There must be great practical value in the natural history lessons of a teacher who does not know enough about bugs, to keep his pupils' heads clear."

"Of course you found out how he taught grammar," said the judge somewhat sarcastically, for he began to feel a little nettled at the extent of John's observations.

"Certainly I did," replied John coolly. "He marks out a lesson each day, in the book, and says, 'We will take to there, next time,' and then he illustrates the worth of his teaching by a speech such as I heard him make to-day, 'Don't you never do that in that way again. That ain't no way to get the

answer.' He hears the pupils say the rules for capitalization and punctuation, and lets them write upon the black-board and paper, without dreaming that those rules mean something; for I noticed several sentences upon the board which seemed to strive by the abundance of their capitals to atone for their entire want of punctuation."

"But punctuation is a very difficult study," said the judge, whose knowledge of punctuation only extended to putting a period at the end of a sentence.

"Not so," replied John. "Children will naturally use short sentences. After these and after abbreviations, they should know enough to place a period. The use of the interjection point is not at all troublesome. They scarcely ever need use a colon, a semicolon, or an exclamation point. For the use of the comma but one simple rule need be given,—when there is a break in the sense, put a comma. This simple rule covers nineteen-twentieths of the cases where a comma is needed, and it is really surprising to see how readily the children can be made to see these breaks in a sentence."

"I never could see," continued John, more to himself than to the judge, "what need we have for so many stops. Exclamation points are sensational humbugs. Interrogation points are not needed, for the form of the sentence makes the question. They used to think it necessary to put one before and one after a question, and do yet in some languages, so that ample warning of a dangerous query might be given. Then the colon—hardly anybody uses a colon now-a-days. Brackets and parenthesis marks have formed a co-partnership; while the numberless hands, daggers—and I know not what all they used to sprinkle the pages so plentifully with, are fast passing away. Good riddance to bad rubbish, say I."

"I think they use fewer capitals now than they used to," remarked the judge.

"Yes, and they will use fewer yet, by and by. Some of our rules we give to the pupils such as writing the principal words of their headings with capitals, are not wise. Still, it is better now than when every word of importance had to begin with a capital. It is but a few years since some of the European governments abolished the practice of beginning all nouns with capitals, and required the pupils to capitalize as we do."

"The Los Alamos teacher is an advocate of reformed spelling, I believe," said the judge. "He uses A—'s phonic speller, he told me."

"Yes, and that book uses forms of letters and diacritical marks to be found nowhere else save in that book, and the accompanying readers. So, when the pupil goes to Webster or Worcester to hunt up the pronunciation of a word, the study he has put upon A—'s system will be of little service to him."

The judge had never perceived that one set of marked letters differed from another set, and so he wisely remained silent.

"A teacher that requires his pupils to use a spelling-book," continued John, "is seldom successful in teaching them to spell well. We have many useless books in our school-room, but the spelling-book is worse than useless. It is a positive hindrance."

"Did you not think the reading class a good one?" inquired the judge. "To be sure the teacher was somewhat hoarse, to-day, but I understand that he prides himself upon his reading, and his reading classes."

"Does talking ever make you or your wife, or even your boy Thomas, hoarse," inquired John, rather demurely; for the judge and his family were noted for being great talkers.

"Why, no, I can't say as it does," admitted the judge.

"Reading should be the same as talking; and the teachers who read or talk naturally and do not strain after unaccustomed tones and effects, need never complain that they have made themselves hoarse by reading or talking too much. Did you not notice the high, unnatural key in which the pupils pitched the voice when they began to read? I will not speak of the unnecessary amount of emphasis given to comparatively unimportant words, of the absence of those nicer modulations which show that the pupil feels what he is reading, of the throwing together of words, and of the consequent indistinctness of utterance, but let us look only at what the pupil learned from the reading lesson."

The class which John and the judge had heard were reading in McGuffey's Fifth Reader, and they read Lesson XX on "Man and the Inferior Animals," while John and the judge were visiting the school.

"Here was a chance for our amateur zoölogist to give the class and the school an instructive lesson on animals. The piece, rightly handled, is a valuable piece, for it is chock-full of errors, of untrue assertions. But the teacher never called attention to a single one of them, but allowed the class to believe that what they read was all so."

"I did not notice any incorrect statements in the piece," said the judge somewhat bewildered at John's remarks.

"Let me call to mind a few of them," quietly replied John. "The first assertion was, that animals have no reason. No sensible student of animals would ever make such an assertion as that, and every lover of horses and dogs delights in giving instances of their reasoning."

"Yes, our dog certainly has shown, in many cases, what must be called reason," admitted the judge.

"Then the writer said that animals use no implements, which is also untrue. That animals make no mistakes, when I have noticed hundreds of their errors, seems to me a very rash assertion. Look at these nests the mud-swallows are building. See! Many of them have already fallen by their own weight. The writer asks if we ever heard of a bird lamenting over a half-finished nest, or puzzling her little head how to complete it. Yes, hundreds of times, I answer. I have seen birds tear down and re-build, bring material, and then throw it away as unfit; scold their mates for building in a way they did not approve, and not unfrequently desert their entire work, and build another nest in a different place, before they would be satisfied."

"Yes, I have known animals that dug burrows, and left them, and dug others because the first did not suit in some way."

"I think the writer must have observed bees but little or he would not

asked if we ever saw clumsy, irregularly shaped cells, or a difference of opinion among the architects. I have, many a time, seen one bee pull down a cell built by another and rebuild it. I have seen them scrape the cells so thin that they would break down. I do not think a bee consciously intends to make a cell six-sided, and though I have never seen it explained, I think it gets to be six-sided in this way. First it is built round, a little larger than the worker's body; then the walls are scraped until the bee thinks by tapping that no more wax can be removed with safety. This of necessity makes the cell six-sided, for there is no other shape coming so near to a circle which allows such uniform thinness of shell, and no waste of wax. But when wax is very plenty, or when the bees are fed on old comb, I have seen very clumsy, irregular cells, and as all bees are not of the same size no comb is really regular."

"Yes, and the bees often mistake the strength of their wax-supports and the comb, when filled with honey, breaks down," added the judge.

"That talk about the lower animals being better physicians than we are, is pure bosh," said John. "They are wiser than folks this far, they don't run to a doctor every time they get sick. Then the writer says that when man's life is half wasted he has done with his mistakes. I suppose he has passed the wasted half of his life, but I must confess that I expect to make mistakes to the day of my death."

"We all make mistakes," admitted the judge.

"Then, to talk about a man only making improvement in the face of the science of to-day, is simply ridiculous. I do n't think that writer was a paleontologist or he must have known that fossil remains show a greater improvement in the brain capacity of horses and many other animals than in man himself, if we are to judge by fossil remains alone. All animals wild or tame are improving. They must improve or they die. And I believe that swallow that built in the rafters of Noah's ark (how did he know there were rafters in Noah's ark?) could n't build near so good a nest as the swallow of to-day. Turn Noah's swallows loose, and they would starve to death in this age."

"Do n't you think the last verse where 'Wild destructive flames shall warp the skies,' decidedly Millerite?" inquired the judge.

"It was imagination and not science gave authority to that verse. But here we are at home again. I am much obliged for the ride, and if you need a pair of spectacles on your next trip, take me along."

With this laughing remark, John bid the judge "Good-day" and went to his house. Now would it not be well for the sovereign voter who selects at the polls a county superintendent of schools, would it not be well for that voter to ask himself what kind of superintendence he desires? If he only wants a good fellow, who will draw up the warrants for the teachers, and take the morsel of salary the law allows him, run a church, or law office, or a store in addition to his superintendency that he may make a living, ride around the country and look in at the schools once a year to save his ten dollars minus his horse hire, if he desires such superintendents he can find them in abundance. But if he desires a real *superintendent*, a helper of the weak, a leader of the strong, he must not expect to find him in the pulpit, or at the bar, among the drugs, or

behind the counter, on the farm, or in the workshop. One who is to teach teachers must himself be a teacher, trained in the profession, familiar with schools and school-rooms, alive with his calling, and imbued with the spirit of progress.

Unless you have such a superintendent you had better save your money and get along without one. As a poor teacher is oftentimes worse than no teacher, so an incompetent superintendent is worse than none at all.

EDUCATIONAL GLEANINGS.

[From the Scrap-Book of a Teacher.]

PRINCIPLES IN TEACHING.

“IF there is a first principle in education, it is this—that the discipline which does good to the mind is that in which the mind is active, not that in which it is passive. The secret of developing the faculties is to give them much to do, and much inducement to do it.”—*John Stuart Mill.*

“To enlist pleasure on the side of intellectual performance is a point of the utmost importance ; for the exercise of the mind, like that of the body, depends for its value upon the spirit in which it is accomplished.”—*Tyndall.*

“In every branch of study, the mind should be conducted to principles through the medium of examples, and so should be led from the particular to the general ; the concrete to the abstract ; the empirical to the rational.”—*Spencer.*

The analytical or logical sequence of teaching, according to Bain, comprises the following distinct heads :

1. From the simple to the complex.
2. From the particular to the general or abstract.
3. From the indefinite to the definite, or from the unqualified to the qualified.
4. From the empirical to the rotund, or scientific.
5. In the culture of the power of conceiving, the analytical order needs to be strictly followed.
6. We proceed from outline to details.
7. As a general rule, we proceed from the corporeal to the incorporeal, from the physical to the mental.
12. It is not possible for any teacher to apply the preceding method in all instruction. In the elementary school work much instruction is of necessity, empirical, and knowledge is picked up piece-meal.

It would be well if some older person were present at all diversions of youth.—*Cicero.*

A COMPOSITION EXERCISE.

BY MRS. K. B. FISHER.

[Oakland, Cal.]

I BELIEVE teachers generally will subscribe to the opinion that, of branches taught in our public schools, English Composition is at once one of the most important and the most neglected. Teachers and pupils alike find the exercise irksome and the results unsatisfactory. In offering a paper on this subject, I do not flatter myself that I have made any new discoveries, nor have I any theory or system to advance; but having often derived pleasure and benefit from hearing the experience of others, I have thought the record of an actual exercise in my class-room might not be entirely uninteresting.

The average age of the pupils is about fifteen years, and the present is their fourth month in the high school. We began our term's work with many exercises in the mechanics of composition, the transposition of poetry to prose, the writing of abstracts from articles read aloud by myself to the class, and the study of some of the more common figures of speech, taking as a basis for the latter exercise Bayard Taylor's "Song of the Camp," and Bryant's "Lines to a Waterfowl." These poems were critically studied, portions of them committed to memory, and a paraphrase written by the pupils.

Thus far, the work had been mainly on ideas furnished by others, varied by word exercises, and descriptions of objects seen by the pupils. To introduce the class to the work of evolving and arranging original ideas, after some general remarks in regard to logical and systematic arrangement of thought, I requested each pupil to write upon a slip of paper a subject which would be pleasant and useful for discussion. From the forty handed in, six were selected by the class and placed upon the blackboard, viz: "The Panama Canal Project," "Boys," "Cooking," "The Branches Proper to be Taught in our High Schools," "Punctuality," "A Trip to the Country." By vote of the class "Cooking" was chosen as the subject of the afternoon's lesson. The pupils were requested to note down topics as they were mentioned, and I then called upon one and another for questions suggestive of topics for their essay. I give them in the order in which they came from the class:

1. What utensils should be used?
2. Cooking an accomplishment.
3. A necessary thing in a good wife. (This from a boy.)
4. Should meat to be boiled be put in hot or cold water?
5. What constitutes good cooking?
6. What is the result of cooking in impure water?
7. Encouraging cooking-schools.
8. Good cooking necessary to health.
9. Why men should learn to cook. (From a girl.)
10. Cleanliness in cooking.

11. Use of yeast powder.
12. Use of salt and spices.
13. Why are soda and cream tartar mixed?
14. Why does man cook his food?

The pupils were encouraged to talk freely on each topic as it was presented, and many facts were brought forward in regard to the elements of different foods—the customs of the ancients—the habits of savage tribes—and by a pupil who had spent some years in Japan, Oriental peculiarities.

After a half hour's talk, the class was desired to prepare schemes for an essay on the subject, and of the forty handed in, the following are specimens, the first being presented by a boy, and the others by girls:

- I. Introduction: Difference between man and beast, in that man cooks his food and animals do not. Reason.
- II. Cooking necessary to health. Reason.
- III. Cooking an accomplishment. Reason.
- IV. Cooking-schools to be encouraged. Reason.
- V. Necessity of man's learning to cook. Reason.
- VI. Necessity of woman's learning to cook. Reason.
- VII. What constitutes good cooking.
 - (a) Ought food be cooked in copper utensils?
 - (b) How should meat be boiled. Reason.
 - (c) Use of yeast powder—salt—spice.
 - (d) Necessity of good bread. Reason.
- I. Introduction.
 - (a) Man the only animal who cooks his food.
 - (b) Object of cooking food.
- II. What constitutes good cooking?
 - (a) Good materials properly put together,
 - (b) Proper seasoning.
 - (c) Properly cooked.
 - (d) Cleanliness.
 - (e) Proper utensils.
- III. Cooking an accomplishment.
 - (a) Necessity for a good wife.
 - (b) Necessity of men's learning to cook.
 - (c) Encouragement of cooking-schools.
- IV. My favorite dish. Conclusion.
 - I. Introduction.
 - (a) Man cooks his food. Animals do not. Why?
 - (b) Cooking is the art of what? Elements where found?
 - (c) What constitutes good cooking?
 - II. What nation made cooking a science?
 - III. Utensils in which cooking should be done.
 - (a) Utensils of the ancients.
 - IV. Good cooking a necessary accomplishment.
 - (a) To every wife.

(b) Necessity of man's learning to cook.

V. Good cooking necessary to health and happiness.

(a) Necessity of perfect cleanliness.

(b) Results of using impure water.

(c) Necessity of good bread.

(d) Necessity of ingredients of best quality.

(e) Use of yeast powder, salt, and spice.

(f) Why are soda and cream tartar combined?

VI. Encouragement of cooking-schools.

(a) In what century and by what nation were not only cooking-schools formed, but schools to teach the young how to masticate?

VII. Should meat be put to boil in cold or hot water, and why?

VIII. Great necessity of good bread.

Crude and illogical as the attempts may seem, I did not feel disappointed with them as the first efforts of the kind. Half a dozen of the best were placed on the blackboard and criticized by the class, the members of which were then requested to remodel their own plans and expand them. Of course much improvement was visible in the second draft, and many of the essays were not only creditable to the writers but interesting in themselves. I may add that many of the class were so desirous of studying the subject of the Isthmian Canal that four were chosen to debate, in one week's time, the question, "Is the Panama Route Preferable to the Nicaraguan," with the arrangement that time should be given for others to express their views on the comparative merits of the two.

We spend forty minutes daily in the study of English Composition, and the class enter about it with, certainly, no less enthusiasm than they evince in other branches.

DROWNING.

BY DR. BURT G. WILDER.

[From *Emergencies.—How to Avoid Them and How to Meet Them.*]—(Putnam's Sons.)

HOW TO RESCUE THE DROWNING.—Dive with your eyes open; approach the body from behind; seize the hair, or arms near the shoulder; get into a perpendicular position, tread water, and you are soon at the surface; get more behind, still treading water, and catch the body by both armpits. Throw yourself on your back and swim to shore.

HOW TO RESTORE.—Avoid delay. Unless a house be close at hand treat the patient instantly, on the spot.

Loosen clothing, but do not stop to remove it.

If several be at hand, let one go for a physician, another for hot flat-irons, cordials, blankets, and a wagon to carry the patient after resuscitation.

But these and all other things are secondary to the speedy restoration of breathing.

If the patient has been for a short time in the water, or if the beating of the heart can be felt, turn him on one side; rub the face, then dash water on it. Dash hot and cold water alternately on the chest.



If revival is delayed, clear the air-passages.—Turn the patient on his face, then act as shown in Fig 1.* Bestride his hips, with your face toward his head; lock the fingers under his belly, and raise the body so that the head just rests upon the ground. Then jerk the body smartly, to remove the mucus and water from the mouth, throat, and

windpipe. Hold the body suspended about five seconds, and repeat the jerk more gently two or three times.

METHODS OF RESUSCITATION.—Not having been able to decide upon the relative merits of the methods proposed, the writer names them mainly in the order of their simplicity.

Hot water.—Obtain water as hot as the hand can bear, about 140° F.; saturate with it the patient's clothing, or blankets in which he is wrapped; hold the tongue forward.

The proposer of this method affirms its efficacy after prolonged submersion. Experiments upon cats lead the writer to recommend it whenever the hot water can be obtained. Probably warmth and rubbing are always useful.

The Michigan Method.—One operator; patient on the face. (See Figs. 2 and 3.)

Place the patient on his face. Bestride his body. Grasp the clothing over the shoulders; if the body be naked thrust your fingers into the armpits, clasping your thumbs over the shoulders. Raise the chest as high as you can without lifting the head from the ground, and hold it long enough to count slowly *one, two, three.* (See Fig. 2.)



*The figures are copied, by permission, from the Report of the State Board of Health of Michigan.

Fig. 3.



Then let the body rest on the ground, the forehead on the flexed arm, the neck straight, the mouth and nose free. Place your elbows just inside of your knees, and your hands on the sides of the chest over the lower ribs. Then press downward and inward with increasing force long

enough to count *one, two*. (See Fig. 3.)

Suddenly let go, grasp the shoulders, and raise the chest as before.

Repeat these movements alternately with regularity, 10 or 15 times a minute, until natural breathing begins.

Holding the tongue.—In the Michigan method the tongue hangs forward and downward by its own weight so as to leave the glottis clear. But in the others, unless the tongue be secured it is apt to lie upon the glottis, and may thus choke the patient even after he tries to inspire. The elastic band is apt to slip off. The tongue may be held pretty firmly if grasped by a handkerchief. When no one is at hand to attend to this matter, I suggest that the tip of the tongue be transfixed with a pin, around which a string may be tied in a figure-of-eight manner. The string may then be secured to the clothing, or around the neck. A pair of toothed forceps are of course efficient holders of the tongue.

The Howard method.—Two operators.—The patient is laid on his back, his arms fully extended backward and outward, a firm roll of clothing being placed under the false ribs so as to throw their anterior margin prominently forward. The hands should be held upon the ground in front of the head, and the tongue held forward.

The other operator, facing the patient, kneels astride his abdomen, and places both hands so that the balls of his thumbs rest upon the anterior margin of the false ribs, the fingers falling naturally into four of the lower corresponding intercostal spaces on each side.

The elbows of the operator being then planted against his sides, he has but to throw himself forward, using his knees as a pivot, and the entire weight of his trunk is brought to bear upon the patient's false ribs. If, at the same time, the fingers of the operator grasp and squeeze the false ribs towards each other, these combined actions crowd them upward and inward. . . . The operator then suddenly lets go, and returns to the erect position upon his knees.

Test of correctness.—If either of the methods be properly performed, air can be felt coming from the mouth or nose at each compression of the chest.

When breathing begins, give hot tea or coffee, or spirits, by the teaspoonful; but be sure the patient can swallow. Place the patient in a warm bed, allow plenty of fresh air, and keep him quiet. Watch him even in sleep, because

violent paroxysms of pain sometimes follow resuscitation, and the patient may injure himself if not held securely.

After long submersion, is recovery possible?—According to Harley (p 881), dogs kept under water $1\frac{1}{2}$ minutes always died, if water had entered the lungs. If it had not, the trachea being plugged, they survive a submersion of 4 minutes. When persons rise after sinking they usually get some air, and less speedily come into a state from which recovery is impossible. The greatest period between the last inspiration and the stoppage of the heart is 4 minutes. Some think that no recovery has been made after complete cessation of the heart's action. We infer that after complete submersion for 5 minutes recovery is improbable, unless the person had been previously choked, or in a fainting state, so that no water entered the lungs.

THE FIRST SCHOOL DAYS.

BY MRS. REBECCA D. RICKOFF.

[Cleveland, Ohio.]

THE wise teacher, foreseeing the difficulties she will have to encounter, prepares for them beforehand. On the morning of the first day she makes a point of being in her school-room so early as to have time to make special preparations for the reception of the children. For her own sake she will need to come early in order that she may herself be sure of her surroundings. She will see that the room is properly ventilated, is of the right temperature; that the shades are neatly rolled up; that the table cover is neatly put on; that chalk, erasers, pointers, charts, etc., are in place and ready for use; that the blackboard is at least clean, though it would be better if it were adorned with a few pictures drawn by her own hand. Are these trifling matters? They are often neglected, and yet attention to such minutiae gives a moral force in favor of order and preparation for work before the time for work is come and prevents a division of attention on the part both of teacher and pupils.

The *ideal* teacher would decorate the bare, cold walls of her school-room with garlands, would fill the staring windows with blossoming plants, and beautify her room with pictures, bouquets, and ornaments. She would make the first impression of the school-room so charming that it would be to children always a bright remembrance.

The teacher, having received the children, cleared her room as far as possible of all pupils who do not belong to it and seated the rest, comes at last to the time when she must approach them and address them as a school. How many a young teacher has stood in doubt at such a moment! The children are quiet and watchful, wondering what is to happen next. The teacher does not stand upon the strange and awe-inspiring platform, but down near to the

children. In a bright, cheery way she addresses them. She needs to be careful what words she uses ; they must be not only simple and childlike, but they must be common words. Generally the teacher's culture is superior to that of her pupils, and she will naturally use language to which they are not accustomed. She needs therefore to make an estimate of their average capacity and adapt her words to it ; else she might almost as well speak to them in a foreign tongue.

In a few pleasant words the teacher greets the children, if her welcome be nothing more than simply "I am glad to see you here, children." What she says is not so important as the way in which she says it. Unaccustomed to the teacher's voice as the children are, they will perhaps fail to catch the full meaning of her first sentences, but the impression of her tone, her look, her manner, will remain with them.

The teacher now tells the children a story. Is story-telling out of place in the school-room? The story-tellers of the world have ever been its greatest teachers. She does not tell them a new story, but an old, old story, one likely to be familiar to them all, no matter what nationality they may be. "Cinderella"—that came over the mountains of Asia with the Aryan race—that was told thousands of years ago in old Egypt ; "Red Riding Hood," "The Three Bears." Whatever the story is, it must be familiar and dramatic, and the teacher must tell it in a dramatic way. By gesture, look, and tone she must make the picture live before the children. By such a story told in such a way the teacher can win her school in the very beginning. The children being warmed into interest and attention, the teacher now holds with them the first conversation.

"Well, children, you find school a very different place from home, do n't you? Have any of you as large a room as this at home? Have you as large a room as this in your house?" Appealing here and there to a bright child who she thinks will answer. "And so many children, too! Have any of your mothers as many children as are here? Can you tell me how many children your mother has? Don't you know? Do *you* know how many children your mother has?" calling upon another. "And your mother has how many? And I have—let me see—one, two, three, four, five, six, seven, eight,—O, so many children! I hav'n't time to count them all. When I was a little girl I used to know a story about an old woman who lived in a shoe. Let me see—how does that story go?" The children watch her eagerly as she repeats slowly, as if recalling :

" There was an old woman
Who lived in a shoe,
And—and——"

"Why, I used to know that story quite well when I was little like you. Can't any of you tell me what comes next?" In this way she induces one and another to help her, perhaps finds some ready to repeat the whole rhyme. She lets all who will say something—anything—if only she can get them to speak.

Some have spoken and the rest are in sympathy ; it is an established fact that they can speak in the school-room in the presence of all the rest. A great

point is gained. They have discovered, too, that there are other children there who know the same things which they know, and the teacher knows the same things, too ; this is common ground ; something to build an acquaintance upon.

* * * * *

After the exhilaration of this exercise the children will need quieting. The teacher may tell them to be quiet, but they will not because they cannot be. Already they have sat still much longer than they are accustomed to do. They now need some physical exercise.

The teacher requests the children to rise ; all do not get up ; they have not understood her perhaps, or are afraid. She walks down among them, laying a caressing hand on the head of a timid one here, patting the cheek of a frightened one there, picking up a book or scarf that may have fallen, and carefully putting it in its place, all the time showing them that she wishes and is waiting for them all to stand up. "I see a little boy here who has not stood up yet ; and this little girl, is n't she going to stand up with the rest?" etc. When all are standing, she says : "All hold up your hands this way—high up, so that I can see them. Down !" The teacher suits the action to the word and the children instinctively imitate her.

"All hold your hands out in front—this way. Down ! Hold up both hands, high up—higher. O, so high ! If we could reach high enough we might touch the top of the room. Look up and see how high it is. Stand on tip-toes and see if you can reach it."

After this exercise the teacher requires the children to be quiet. It will be good discipline for them. But she must not be surprised if they are not very quiet, for their ideas and hers are widely different upon that point. It is useless for her to exclaim "Be quiet. Do be quiet. Be quiet, I tell you !"

A teacher having charge of a new and rather turbulent school, had, after much effort, succeeded in securing the attention of her pupils, and felt sure she saw in their eager, earnest faces a desire to obey her, to win her approbation, and yet, when she told them to be quiet, or to do anything quietly, there seemed to be almost no attempt on their part to obey her. Why? She concluded that it must be they had no clear comprehension of what she meant by the word quiet. Suddenly she said to them : "Stop ! children. I have something to show you. See ! See this sunbeam on the floor here ! Look at it. Listen to it. Does it make any noise ? It shines and shines, but it makes no noise. It is quiet. It shines quietly. Now let me see if you can be as quiet as the sunbeam." Scarcely a breath was heard in the room. "Now let me see how quietly you can rise." The effect was wonderful.

When the opportunity offers, the teacher gives the children their first lesson, which is a training lesson in school ways. She begins with a story :

Once there was a little girl who came to my school named Emma. Emma had bright, merry eyes, and long, soft curls, and she used to wear a blue dress and nice clean aprons. She had such a happy, smiling mouth that you would just wish to kiss her. She was a good little girl, and when I told her how to sit in school she would—"

"Shall I show you how she used to sit in school?"

She walks to the platform followed by many curious eyes. She sits down in a chair and shows them ; she lifts her head erect, throws back her shoulders, and places her feet near together. She performs these actions separately, slowly, and in a manner to impress the children with the importance of what she is doing.

"This is the way Emma used to sit in school. You may all sit in this way." A few of the children imitate her. Without reproving the others, she points these out with approval. "Johnny is sitting right." "That is the way, Mary." "Fanny, here, sits almost as well as Emma used to sit." "That will do."

After a rest she says, "Now, children, let us try that again and see if you can all get it right this time." She repeats precisely the same actions, speaking in a gentle, cheerful way, but in a tone so firm and decided that it will strengthen the fluctuating little wills. As she makes the motions she says, "Heads up, shoulders back, feet together ; ah, that is well done ; almost all of you sit right this time. Look at Charlie, how straight he sits ! See how Ellen holds her head up ; and Willie, I see, has put his feet near together." Perhaps the teacher ventures a third trial, but not more than that or she will weary the children.

* * * * *

It is important that every time the children are trained in school ways the lesson be given in the same order and in the same manner, because it is only by constant repetition of the same thing that the perception in the child's mind will become a clear conception, an idea which he will be able to grasp and hold, and every such physical exercise should be accompanied by some training in language—the putting into words and into a complete sentence the experience gained through the exercise of the body.

It would be impossible to give, in such a paper as this, even a synopsis of the number and variety of the exercises which are necessary in the first school days. About the hand, the slate, the school room, and the desk, there group a number of beautiful lessons which are not object lessons, nor language lessons, nor games, nor occupations, and yet which are all of these and more. We might put it thus : With each object lesson there should be a story ; with each story a conversation ; with each conversation a physical exercise ; with each physical exercise a training in school ways, and with each and all and through all a training in the use of language. Accompanying these exercises there should be, as soon as the school is organized, instruction in the usual branches of study. Not by any means because the conditions are favorable to such instruction, but because the children have come to school with the understanding that they are to learn to read and write, and they should not be disappointed, and neither should their parents. I am not disposed to dispute the statement that learning to read is the chief business of the first school year, but I do assert that it is not the chief business of the first school days. Even though the only end desired should be to give the children the best possible instruction in reading, writing, and numbers, yet can this end be best attained by giving chief attention in the beginning to other things.

If by this paper I have succeeded in drawing attention to the fact that a

readjustment is needed in the kind of work required of teachers during the first school days, I shall be content. If by the lessons presented I have indicated the direction in which that reform is possible, let all the credit be given to those noble young women in whose school-rooms I have observed such lessons as these wrought out to beautiful perfection.

EDITORIAL DEPARTMENT.

WRITTEN EXAMINATIONS.

IT is time to utter a word of solemn protest against our present system of written examinations. Nine-tenths the fault found with our schools, may be traced to the bad habits, mental and moral, engendered by a system which has become an almost universal substitute for intelligent teaching. It is not too much to say that in our large cities, in particular, there is a strong tendency to make our teachers mere machines and their pupils unreliable poll-parrots.

One result of the system has been an utter abandonment of thorough intellectual training; the educating or drawing-out-process is lost sight of in the general scramble for high percentages on set questions, answered in a prescribed formula of uncomprehended terms.

Teachers and pupils suffer alike. The former become automatic; indifferent during the early part of each school year, anxious solely to promote when the examination month arrives. Pupils are in a chronic state of excitement: to them it is everything to pass the weekly, monthly, semi-annual, and yearly examinations—nothing to master the subjects they are supposed to study.

Examine a majority of our school-children and they answer glibly enough; require them to talk or write on any given topic, and they show a wonderful ignorance of the most ordinary every-day subjects.

As an illustration, a bright high school girl said to us the other day, in the course of a conversation where certain deficiencies were pointed out, "I cannot help it; I have no time to learn anything; I am too busy, night after night, preparing for examinations." And yet under the able administration and by the strenuous and unremitting efforts of Mr. Swett, our Girls' High School suffers less from this great evil than our other schools.

The moral results are tenfold worse than the mental. The temptation to deceive the teacher, to communicate, to impart information, or receive help is irresistible. And what wonder! Children are gifted with a keen perception; they see instinctively that their teacher herself is not honest. She is placed there to train them; they feel they are only crammed.

They realize intuitively that the height of her ambition, is to promote them all; they believe she will not watch too closely the means by which the common object is attained.

The result is that through the graded schools of our large cities, dishonesty has become so common, as hardly to be remarked; honesty is the exception, admired by reason of its rarity. We have known pupils to admit that they "cheated their way up" through the schools, as far back as they could remember.

Does not this thing call for a remedy? Is it not time for a radical revolution? Is it right that our children should be stupefied, dwarfed mentally, and debased morally? These queries demand a reply. There must be some better way of testing a student's progress. Whatever it is, anything is better than this; nothing can be worse.

OUR "GODLESS SCHOOLS."

REV. DR. W. H. PLATT an Episcopal clergyman of San Francisco, in several recent addresses, has made a bitter attack on our system of free popular education.

Dr. Platt's strictures are discussed and refuted in an exhaustive editorial article in the *Sacramento Record-Union* of May 24.

We propose to state Dr. Platt's arguments in detail, and comment on them in our next issue, when we shall make extracts from the *Record-Union's* argument.

A few points we may make here.

Dr. Platt terms our schools "godless" because some kind of religion is not taught in them. (We state the reverend gentleman's position mildly and broadly.)

In making this point Dr. Platt apparently does not know what our schools are for. In a machine-shop are employed many human beings; religion is not one of the avocations there taught, yet no institution can be well managed without a due observance of the precepts of morality. So school is the place where religion should be practiced, not taught.

Dr. Platt's arguments and the plea he makes for a so-called religious education arouse the suspicion that the doctrines he advocates, will not commend themselves to minds not especially prepared to entertain them.

ACKNOWLEDGEMENTS.

WE return hearty thanks to Messrs. J. B. Lippincott & Co. of Philadelphia and G. P. Putnam's Sons of New York City, for their kindness in placing at our disposal, the illustrations to the two articles—THE AMERICAN SUEZ and DROWNING in this number of the JOURNAL. The Messrs. Lippincott furnish the electrotypes of the former article, which at this time, in view of the recent visit of M. de Lesseps and the importance to us of an inter-oceanic canal, will prove both interesting and valuable.

The article on DROWNING is so clear and specific that it will repay perusal.

Our contributions this month, we believe are rather above the average. Dr. LeConte concludes his papers on the Climatology of the Pacific Coast with a paper whose practical value can not be overrated. He gives an exposition of the causes and distribution of our rainfall, so clear that teachers can well use it in their class-room work.

Mr. Drake's article is replete with sharp criticisms on too common educational faults and failings. Everyone of his papers is worth a week's lessons in normal training.

From Mrs. Fisher of the Oakland High School, our readers get an excellent and highly practical article on composition. It shows clearly what to do and how. Mr. Griffith and B. make some good points, and from J. S. we have a page of choice extracts worth preserving.

SUMMER SCHOOL OF SCIENCE.

THE first annual meeting of the California Branch of the Chautauqua Literary and Scientific Circle will be held at Pacific Grove, Monterey, commencing on the Fourth of July, 1880.

Rev. Dr. Dwinell, of Sacramento, will open the exercises with an appropriate address. The session will continue two weeks. Courses of lectures will be given, as follows: Marine Botany, Dr. Anderson of Monterey; Marine Zoology, Dr. Wythe of Oakland; Pedagogy, Prof. C. H. Allen; Economical Botany, Prof. Sanders of Fresno; Astronomy, Prof. Moore of San Jose; Greek Language, especially as related to Biblical Literature, Prof. Martin of the University of the Pacific; Chemistry in the Household, Prof. Norton of San Jose; General Botany, Miss Mary E. B. Norton. Almost all the leading divines of the State have a place on the programme. It is hoped that extensive collections of material for museums may be made. Negotiations are in progress with John Muir, Prof. Joseph LeConte, and Prof. Hilgard, for some extraordinary attractions.

The railroads have made very satisfactory arrangements. Fare from San Francisco to Monterey and return, will be but \$6.00; tickets good for some three months. There will also be special excursions at much lower rates. The cost of the entire programme of lectures will be covered by a ticket sold at \$2.50.

A magnificent hotel has lately been erected at Monterey, and there are extensive accommodations at low rates, at Pacific Grove. Descriptive circulars may be obtained of Miss Lucy M. Washburn, San Jose, secretary of the C. L. S. C.

The object of the Circle is to furnish a high grade of instruction at the lowest possible rate, to the general public. The gates are open to everybody. N.

THE NORMAL SCHOOL.

THE annual commencement of the California State Normal School was celebrated at San José, June 20th. The closing exercises were held in the auditorium of the California Theatre. Forty-five students, having completed the full course of three years, were graduated, receiving first-grade diplomas. About the same number of second-grade diplomas were given to candidates who had completed the two-years' course. Supt. Campbell delivered the diplomas with a characteristically pointed and telling address.

The new building will soon rise on the foundations of the one recently burned. It will be of brick, and though somewhat inferior to the old one in architectural finish, will be superior in convenience and adaptation to the use of the school. N.

The attendance-roll of the school, during the past year, aggregates 575 names. The number in the teachers' classes, at the close of the year, exceeded 350. The losses in the matter of apparatus will soon be repaired, but years of work will be necessary in order to replace the collections in Natural History. N.

NORMAL SCHOOL DIPLOMAS.

THE rule adopted by the Board of Examination of the City of Jan Josè provides that all applicants presenting first-grade diplomas shall receive the highest certificates issued by the city; and all holders of the second-grade diploma, representing the two-years' course of study, shall receive the second-grade certificate.

FROM a scholastic point of view, this has been a good year for the schools. The graduating exercises of the various high schools show this. The graduating classes are generally larger than ever before. So far we hear of but one high school likely to be discontinued, that at Santa Rosa. We hope on a sober second thought, the Trustees there will reconsider their action, and keep up their school. We need more, not fewer, high schools.

THE disposition manifested by a few County Boards of Education to re-examine their teachers, is unfortunate and much to be deplored. A broad and liberal spirit would suggest a recognition of existing certificates and their renewal in a great majority of cases. The teachers who quite generally form these Boards, will find any other policy short-sighted, and in the end productive of mischief to themselves as well as to the profession.

WE propose to open an additional department with the next number of the JOURNAL, entitled PUBLIC OPINION. The title indicates its aim and scope. Contributions thereto are solicited. Teachers will understand that on their interest and efforts, the success of the department depends. Indeed, so does the maintenance and welfare of the JOURNAL itself.

SO great has been the pressure on the State Printing Office that the new School Law is not yet out of the printers' hands. It is not expected to be ready much before July.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. McCHESENEY, to whom all communications in reference thereto must be addressed.

A SINGULAR occurrence is reported to have taken place lately at Leck, in the grand-duchy of Nassau. During a severe storm in the night the electric discharge fell into a fish-pond stocked with several species. On the next morning the fish were all found at the top of the water, dead. Their appearance was like that of boiled fish, and their meat fell to pieces when it was handled just like the meat of cooked fish. No hurt either internal or external, could be perceived; the scales are not bruised, and the swimming-bladder was preserved still full of air. The water was disturbed and muddy at the time, as if it had just been stirred up.

MR. M. REYNOLDS, in a paper read before the London Association of Foreman Engineers, on practical engine-driving, referred to a source of danger on a locomotive which is perhaps, more important even than that arising from color-blindness. This is the blinding effect of the glowing white light of the engine fire, a brief glance into which, he said, renders the person who has looked for a time, unable to recognize the colors of the signal-lamps.

PROF. Klinkerfuss, the director of the Gottingen Observatory, has, it is said, taken out a new invention in telegraphy. The professor has discovered a method by which up to eight messages may be sent simultaneously by the same wire, an apparatus at the receiving end printing the messages separately and all at the same time.

THE important statement is made by professor C. V. Riley that for the feeding of silk-worms there is no appreciable difference between the leaves of the osage orange and the mulberry, provided care is taken to reject the more tender and milky leaves of the former; as they are apt to produce flaccidity and disease.

GLASS is made iridescent by exposing it at a high temperature to the fumes of stannic chloride, to which barjum or strontium nitrate is added when deep colors are required.

To drill holes in glass take a common drill, run a little fast; do not press on, the weight of the drill press is enough. Drill from both sides, keeping the glass and drill wet with turpentine. Be very careful, when the two holes meet, do not let the drill catch. After a hole is made large enough for a small round file, file to the desired size, keeping the file and glass wet with turpentine.

WE take great pleasure in recording the fact that president Barnard and professor Loomis have both written to the *Post* retracting their assertions as to the inability of ice yachts to out-speed the wind that drives them. They find on examinations, as every one must, that such a result is not only a mechanical possibility, but has been practically demonstrated scores of times by Hudson river yachtsmen whose testimony cannot be gainsaid. The moral of controversies of this nature was happily expressed by the Yankee poet long ago. "Don't never prophesy unless you know."—*Scientific American*.

LORD RAYLEIGH has recently been publishing some important papers upon the spectroscope. He points out, among other things, that, with prisms made of a given material, the limit of a resolving power of the instrument depends upon the thickness of the material traversed by the rays, so that no increase of magnifying power or of the dimensions of the collimator and telescope can compensate for the use of small prisms. Lord Rayleigh has just accepted the professorship of experimental physics at Cambridge, as the successor

of Clerk Maxwell ; the first instance, we believe, in England of a member of the nobility occupying such a position.—*Independent*.

C. W. SIEMENS has recently presented to the Royal Society a paper of much interest upon the effect of the electric light upon vegetation. He finds it to answer perfectly the same purpose as sunlight. Chlorophyl is formed, and all the functions of plant life are perfectly carried on under its influence ; and, what is interesting and important, he finds that plants need no rest or sleep for their perfect growth. So that, by illuminating a hot-house at night with the electric light, the fruits and flowers can be brought forward with great rapidity and without injury to the plant, tree, or vine.

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

Mr. George R. Bissell of West End, Alameda, calls attention to an interesting solution of Problem 28, which appeared in the last *St. Nicholas*.

- $$\begin{aligned}
 (1.) \quad & x^2 + y = 7 \quad \left. \begin{array}{l} \\ \\ \\ \\ \\ \\ \end{array} \right\} \\
 (2.) \quad & x + y^2 = 11 \quad \left. \begin{array}{l} \\ \\ \\ \\ \\ \\ \end{array} \right\} \\
 (3.) \quad & x^2 + xy^2 = 11x \quad \text{by multiplying eq. (2) by } x \\
 (4.) \quad & xy^2 - y = 11x - 7 \quad \text{eq. (3) - eq. (1)} \\
 (5.) \quad & 2x + 2y^2 = 22 \quad \text{eq. (2) } \times 2 \\
 (6.) \quad & xy^2 + 2y^2 + 2x - y = 11x + 15 \quad \text{eq. (4) + eq. (5)} \\
 (7.) \quad & (x+2)y^2 - y = 9x + 15 \quad \text{by fact. 6 and reducing} \\
 (8.) \quad & y^2 - \left(\frac{1}{x+2}\right)y = \frac{9x+15}{x+2} \quad \text{dividing by } (x+2) \\
 (9.) \quad & y^2 - \frac{1}{x+2}y + \left(\frac{1}{2x+4}\right)^2 = \frac{9x+15}{x+2} + \left(\frac{1}{2x+4}\right)^2 \text{ comp. sq.} \\
 (10.) \quad & y - \frac{1}{2x+4} = \sqrt{\frac{9x+15}{x+2} + \left(\frac{1}{2x+4}\right)^2} = \pm \frac{6x+12}{2x+4} \\
 (11.) \quad & y = \frac{6x+12}{2x+4} = 3 \quad \text{when } \textit{positive} \text{ sign is used.} \\
 (12.) \quad & \text{from (2) } x+9=11 \therefore x=2
 \end{aligned}$$

Solutions of Mr. Sturgis' mathematical puzzle have been received from the following pupils of the High School at Vallejo, C. B. Towle, principal :

Misses Goldie Benas, Jennie R. Halliday, Adella F. Hilton, Aggie McKnight, Lizzie Moulty, and Masters John B. Brosnahan, Willie A. Devlin, Grant Halliday, Edward Jones, and J. W. Kavanagh.

Mr. Bissell sends the particular kind of solution of Problem 30 that was desired. It is therefore published. Two pupils of Mrs. Kincaid's Normal class send excellent solutions.

PROBLEM 30.

- (1.) $\frac{a - \sqrt{a^2 - x^2}}{a + \sqrt{a^2 - x^2}} = b.$ In this, mult. both terms of 1st mem. by $a - \sqrt{a^2 - x^2}$
- (2.) $\frac{a^2 - 2a\sqrt{a^2 - x^2} + a^2 - x^2}{a^2 - a^2 + x^2} = b.$ Reduce and c. f.
- (3.) $2a^2 - x^2 - 2a\sqrt{a^2 - x^2} = bx^2.$ Transpose.
- (4.) $2a^2 - (b + 1)x^2 = 2a\sqrt{a^2 - x^2}$ sq. both memb.
- (5.) $4a^4 - 4a^2bx^2 - 4a^2x^2 + b^2x^4 + 2bx^4 + x^4 = 4a^4 - 4a^2x^2$
 Transpose terms, and divide all the terms by x^2 then factor.
- (6.) $(b^2 + 2b + 1)x^2 = 4a^2b$
- (7.) $x^2 = \frac{4a^2b}{b^2 + 2b + 1}$ ext. sq. rt. (8) $x = \pm \frac{2a}{b + 1}\sqrt{b}$

To verify, subst. val. of x^2 (7) in eq. (1) and we have

$$(9.) \frac{a - \sqrt{a^2 - \frac{4a^2b}{b^2 + 2b + 1}}}{a + \sqrt{a^2 - \frac{4a^2b}{b^2 + 2b + 1}}} = b \quad (10.) \frac{a - \sqrt{\frac{a^2b^2 + 2a^2b + a^2 - 4a^2b}{b^2 + 2b + 1}}}{a + \sqrt{\frac{a^2b^2 + 2a^2b + a^2 - 4a^2b}{b^2 + 2b + 1}}} = b$$

Reducing the quant. under Rad. signs remembering that the sq. rt. of a quant. is \pm we have

$$(11.) \frac{a - \frac{a(b-1)}{b+1}}{a + \frac{a(b-1)}{b+1}} = b \text{ or} \quad (12.) \frac{a - \frac{a(1-b)}{1+b}}{a + \frac{a(1-b)}{1+b}} = b$$

Eq. (10) reduced gives $\frac{1}{b} = b$ which is true only when $b = 1$. Eq. (12) reduced gives $b = b$ which is true for all values of b . A somewhat similar case will be found by solving the equation $\sqrt{a^2 + x^2} = a^2 - x^2$.

NEWS RECORD

OUR record closes on May 24th.

Foreign and Domestic.

Postmaster General Key was nominated and confirmed U. S. Circuit Judge for Kentucky in May. His place in the cabinet is filled by Horace Maynard, late U. S. Minister to Turkey.

General Heintzelman who distinguished himself in the war of secession, died last month.

Mrs. Marion Evans (George Eliot) was married in London, Thursday. Mrs. Evans last husband was the celebrated philosophical writer, George H. Lewes.

Lima, Peru, is threatened by the Chileans, and great distress prevails in that city.

A reduction of the national debt of over \$12,000,000 was made during April.

The Chilean squadron bombarded Callao without effect.

The slave trade on the Red sea has been revived.

The mortality in Paris is creating great alarm.

The Pope has recently undergone several painful operations.

The strained relations between Roumania and Bulgaria have come to a complete rupture.

Water has been struck on the Colorado desert at a depth of 280 feet, and is pure and free from alkali.

The Marquis of Ripon has been appointed by the Liberal Ministry, Viceroy of India, succeeding Lord Lytton.

During the present month the daily receipts of the Government amounted to \$1,000,000.

On May 23, a terrible railroad accident, near Santa Cruz on the Southern Pacific Coast R. R. resulted in the death of fourteen persons and the wounding of many others.

As predicted in our last month's RECORD the Liberal triumph in England resulted in again making Gladstone Prime Minister. Mr. Gladstone is Chancellor of the Exchequer in the new cabinet.

At date of writing, it appears that Gen. Grant has secured a majority of votes in the Republican National Convention, and will consequently again be that party's nominee for the presidency.

The plague is reported to have appeared in the Volsk districts in Russia, and famine also prevails. Cases of starvation among the peasantry in various parts of the country are reported.

Telegrams from all parts of the State indicate that immense harvests will be gathered this season. While the recent storms did some damage in a few localities, it is believed they will result on the whole in a general benefit. The southern part of the State is especially jubilant.

Personal.

Castelar, the Spanish statesman and orator, lectures at Oxford University in June. He will speak of the influence of the romantic school upon Spanish literature. His liking for literature is stronger than his interest in politics.

Among the recent visitors to this Coast have been Mr. S. O. Houghton, of Houghton, Osgood & Co., Boston; Mr. Henry Ivison, of Ivison, Blakeman, Taylor & Co., New York; and J. B. Lippincott, senior member of the well-known Philadelphia firm.

There has been a change in the widely-known and popular Boston firm, Houghton, Osgood & Co., by the retirement of Mr. Osgood and the entry of Mr. Mifflin. The firm will hereafter be designated as Houghton, Mifflin & Co.

Mr. Robert C. Winthrop of Boston, presented to President Hayes the desk upon which Jefferson wrote the Declaration of Independence. The gift comes from the heirs of Joseph Coolidge of Boston, to whom Jefferson himself gave it. Mr. Coolidge's wife was the granddaughter of Jefferson.

Educational.

The National Educational Association will hold its next meeting at Chautauqua, N. Y., commencing on Tuesday, July 13th, and closing on Friday, July 16th. Among the distinguished educators of the country announced to take part in the exercises, are Charles Francis Adams, Jr., Dr. W. T. Harris, Anna C. Brackett, and Professor Payne of Ann Arbor, Michigan.

Michigan has appropriated \$30,000 for a reform school for girls.

Compulsory attendance upon school is now the law in Iowa.

The increase of Catholic population in this country in the past twenty years has been upward of 3,800,000; that of priests has been 3,754; that of churches and chapels, 4,022. The gain in priests and churches still continues, while the population is decreasing. Great activity is manifested in educational matters. There are reported 24 theological seminaries, 663 colleges and academies, and 2,246 parochial schools, with 405,234 pupils.—*Independent*.

The valedictorian in the class of 203 graduates of the San Francisco Girls' High School, this year, was a colored girl, Miss Dutcher.

Professor Edward Searing, former State Superintendent of Public Instruction in Wisconsin, has accepted the principalship of the Minnesota State Normal School at Mankato.

The "Quincy System" is about to put out another wing in the shape of a splendid library building, designed by Richardson, and given to the people by an eminent gentleman of wealth in New York, an old citizen of the town.

Harper's Young People is now used in the schools of a number of the Eastern cities as a text-book.

Wisconsin, during the past year, has expended \$2,513,301.83 upon her public schools, which have been largely increased both in number and efficiency.

Adrian, Michigan, has recently secured the State Reform School for girls.

The metric system is taught in all the schools of New York, and corporal punishment is abolished in them.

The kindergarten system has become so popular in St. Louis that the colored citizens have petitioned the school boards to establish it in their schools. The authorities are considering how to comply with this request.

The Boston school committee is about to consider the appointment of a special instructor in hygiene, whose work shall be to teach the normal and high schools—and to perform what other duties may be assigned to him by the board.

Professor Frieze will assume the presidency of the Michigan State University during President Angell's absence in China.

The good ladies of Middletown, Orange County, New York, at the late election of school trustees, brought a summary end to the scheming of the rival political parties, by springing upon the town a ticket of five women, and electing them by an average majority of 150 in a vote of 1,500.

It will take a good while to teach the teachers to teach objectively. All the traditions of the school-room are opposed to it. Dr. Gregory tells a story of a little child who was called up to say its A, B, C, on the first day of school. To the astonishment of the teacher it could not say them. "Sit down," he cried, "and study your lesson." To study a book, to recite from a book, these have been considered the chief end of childhood, at least, school-room childhood. The teacher must now learn to teach in a higher and better way. The kindergarten is setting people thinking. Here we find children at work busily, happily, and improvingly. Thus must the teacher of all small children labor. She must give occupation that will educate. *Central School Journal.*

There has been a recent excitement in Boston as to unsanitary school-houses, which has resulted in improvements in drainage and ventilation in a few buildings. And the old question of discipline came up last week before the committee, on the result of a complaint lodged against a South Boston teacher, who has been in the habit of making her little girls stand for hours without

any support, as punishment. Finally, a child fainted, and hence the exposure. Much to the disappointment of many, she was not discharged, but there is no probability that she will "ever do so any more."—*Central School Journal.*

One of the most interesting educational events of the coming summer will be the two normal institutes for white and colored teachers, in Virginia, during the months of July and August. The University normal school of white teachers will be opened on July 14th, in the buildings of the University of Virginia, at Charlottesville, and continue six weeks. It will be conducted under the auspices of the Department of Public Instruction and Dr. W. H. Ruffner, Superintendent of the Department. The teaching will be conducted by professors of the college—Hon. M. A. Newell, State Superintendent of Maryland; and Rev. W. B. McGilvray of Richmond. On the following day the colored normal school will be opened at Lynchburg, and continue six weeks, under the instruction of Mr. and Mrs. H. P. Montgomery of Washington. Both of these summer schools are supported by the Peabody Fund, and are the outcome of the recent decision of that board to concentrate, for the present, upon the training of teachers in the South. Our leading school-men, after the great conventions of July, will do themselves good by looking in upon these normal schools and giving God-speed to the revival of free education, now led by Dr. Ruffner in the Old Dominion.—*New England Journal.*

General Notes.

Michigan pays her Governor the pitiable salary of just \$1,000, and the indications are that, on the recent vote in respect to amending the Constitution, making the salary \$3,000, she has decided to stick to the \$1,000 rule.

A Catholic merchant in Australia died some time ago, leaving \$7,000 to the Church "to deliver his soul from purgatory." The executor refuses to pay the legacy until proof shall be furnished that the soul of the dead really has been delivered.

ABOUT COINS.—Frequent mention is made in the press of American pennies, but pennies have never been struck by the United States. Our Government strikes cents, not pennies. It would be as proper to call our cent *lepta* or *sesterces* as pennies. Great Britain is the only country that strikes pennies.

The making of coin in America began, it is believed, at Boston, Massachusetts, in 1652, when the home government granted the colonial authorities leave to make a

certain amount. The first were of the value of twelve pence, six pence, and three pence.

The small letter upon our silver money refers to the place where made. C denotes Charlotte; D, Dahlonga; O, New Orleans; S, San Francisco, etc. Those having no letter were minted at Philadelphia.

Turkish coins, which are not very common in this country, instead of A. D. use A. H.—that is the year of the flight of Mohammed, called the Hegira. The first silver money struck by the Romans was in B. C. 269. The motto "E Pluribus Unum" is first seen upon a copper medal struck in 1786. This was six years before the establishment of the Government mint, and was struck, it is believed, at Newburg, N. Y., where there was a private mint at the time.

But few persons have any idea of the cumbrous nature of specie, especially silver and copper. When the British Government remitted specie to Boston to repay their colonies for their disbursements in the Louisburg campaign, the bullion was brought in a ship of war, and weighed twenty tons; the copper, ten tons. The aggregate value was £183,700 (about \$900,000.) It filled 215 chests, and required thirty-five two-horse wagons to transport it from the dock to the treasury.

Coins with dates referring to Anno Domini cannot be found earlier than the fourteenth century. There is one dated in Roman numerals MCCCCLXXIV (1374), and one in Arabic numerals dated 1401. The first English coin referring to A. D., is that of Edward VI., with MDXLIV (1544.) The date of all coins struck earlier than the fourteenth century may be known by referring to the king in whose reign they were minted.

Reckoning nickel at \$2 per pound, the five-cent piece is worth a cent and a quarter. It weighs seventy-seven grains and a fraction. If, then, a nickel five-cent piece is lost, the Government clears three and one-half cents on the issue.

The word penny in the Scriptures and in ancient history refers to a silver coin worth, by weight, about fifteen cents. As the word penny in modern times is always applied to a copper coin, mistakes upon this subject are common in the pulpit and in the Sunday-school room.—*Scholar's Companion*.

The number of different kinds of postage stamps which have hitherto been issued all over the world is estimated, in round numbers, at 6,000. Among them are to be found the effigies of five emperors, eighteen kings, three queens, one grand duke, six princes, one princess, and a great number of presidents, etc. Some of the stamps bear coats of arms and other emblems, as

crowns, the papal keys and tiara, anchors, eagles, lions, horses, stars, serpents, railway trains, horsemen, messengers, etc. The collection preserved in the museum of the Berlin post-offices included, on July 1st, 1879, 4,498 specimens of different postage stamps. Of these, 2,462 were from Europe, 441 from Asia, 251 from Africa, 1,143 from America, and 201 from Australia.

The weight of the brains of numbers of known men, distinguished and otherwise, has been cited for and against the theory that the greatest men possess the heaviest brains. Cuvier is usually found heading the list, with a brain weight of 64.33 ounces. (The average for the male is between 49 and 50.) One is struck with the apparent propriety that this vast intellect should have worked through a heavy brain. Within the last ten years, however, a laborer has died in England, whose brain weighed 67 ounces. Of his history and habits little is known. Though intelligent for his rank in life, he apparently gave no signs of fitness for a higher one. His most intellectual trait, if I remember rightly, was his fondness for reading newspapers, probably the only literature he could easily obtain. "Chill penury" may have "repressed his noble rage," if he had any. He may have been a "mute, inglorious Milton." But who knows whether the sublime imaginations of the poet betoken remarkable cerebral development? The late James Fisk, Jr. had a brain weighing 58 ounces, surpassing Daniel Webster, Chauncy Wright, Dupaytren, and a mathematician of the first rank. Indeed, all these, except Fisk, come after a man who from his second year was reckoned an idiot. A celebrated philologist is below the average, and a distinguished mineralogist much below it. In spite of many exceptions, however, we find distinguished men most numerous near the top of the list, and laborers, criminals, and idiots at the other end of it.—*Thomas Dwight in International Review for May*.

SCENE.—Gold Hill public school. Object lessons in the primary class. Subject: "Grammar."

Teacher—Form a sentence with the word 'deaf' in it."

First pupil—"A deaf man cannot hear."

Teacher—"Correct. Next, form a sentence with the word 'blind' in it."

Second Pupil—"Pull down the blind."

Sensation in school.

"Where are you going, my pretty maid?"

"I'm going to the Annex, Sir," she said.

"What are your studies, my pretty maid?"

"Chinese and Quarternoins, sir," she said.

"Then whom will you marry my pretty maid?"

"Cultured girls don't marry, sir," she said.

—*Harvard Censor*.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SAN FRANCISCO COUNTY.

The graduates of the Girls' High School this year were 203 in number, and of the Normal class, 65.

The following named graduates of the Normal class received ninety per cent. and over on the final examinations, and it was recommended by principal Swett that second grade city certificates should be granted them:

Fannie Lichtenberg, Caroline A. Shaw, Clara L. Fisher, Mary C. McAugh, Eugene M. Bergen, Jennie S. Hatch, Lucy Hyde, Kate A. Kollmeyer, Adele L. Grimm, May C. McDonnell, Evelyn R. Ashmead, Ettie H. Levy, Johanna C. Lewis, Louise Renwick, Virginia Stewart, Harriet A. Spalding, Alice M. Martin, May Thompson, Julia Fischer, Tilly Levy, and Carrie L. Johnson.

The meetings of the Board of Education during the month of May have been unusually interesting and spicy. Not only this, but teachers may congratulate themselves, and those people of San Francisco who have really the interests of the schools at heart, may thank superintendent Taylor, director Van Schaick and the minority of the Board, that the "one man power" is thoroughly broken up, that right and reason will prevail, and that those persons will no longer rule the schools who, though confessing their total ignorance of all school management at one moment, yet obstinately and madly seek to domineer at another.

One important question which has engaged the attention of the Board, is the adoption of text-books. By a vote of seven or eight to three, a new list was solicited. The question is not yet settled, at date of writing, as the Real Estate Association have sued out a writ to enjoin the Board from completing its contract, on the ground that the law calling for bids was not complied with, and that the lowest priced books were not adopted.

Only 250 girls and 180 boys applied for admission to the two high schools this year. About two-thirds have probably passed a successful examination and been admitted. The cause of the small number this year is that there were two examinations, one for graduation from the first grades, and the second for admission to the high school. We think that, on the whole, this plan is wise, as there are always many pupils desirous of finishing the grammar school, who yet do not wish to go to the high school.

Some of the San Francisco schools held very interesting closing exercises this year. Special mention must be made of the Lincoln school—James K. Wilson, principal; the Valencia,—Silas A. White, principal (whom we wish heartily to commend for a manly and pointed reply to Rev. Dr. W. H. Platt, on the floor of the recent Episcopal Convocation in this city); and the Union—principal True. At the Lincoln, superintendent Taylor made an eloquent address, replete with valuable suggestions. At the Valencia and Union, director Van Schaick spoke in his customary pithy and interesting style. This same director made an introductory address that will long be remembered at the commencement exercises of the Girls' High School.

MERCED COUNTY.

The Merced County Teachers' Institute met on April 28th in the Merced school-house. Supt. Dixon in the chair. After a brief address by the superintendent, J. L. McClelland was chosen secretary, and the chair appointed the following committees:

On Programme—Robert Gracey, L. D. Stockton, Miss May Tackett, and J. W. Rossler.

On Music—Mrs. White, Miss Spangenberg, Miss May Tackett, Miss Gardiner, Mark Howell, and B. F. Fowler.

On Resolutions.—W. A. Long, J. L. McClelland, B. F. Fowler, and Robt. Gracey.

On Introduction—L. D. Stockton, Miss

Lynch, Miss Phillips, and Miss Anna McAuly.

At the request of the superintendent Mr. Bernard Marks of Fresno, who chanced to be present, occupied a few minutes in speaking. He made several suggestions relative to the formation of a branch Teachers' Association, co-operating with others already organized in several counties. One main object in such associations should be to protect qualified teachers from the degradation of frequent examinations.

The afternoon session opened with several visitors present. The discussion of spelling was taken up—rather cautiously at first—but soon much interest was exhibited. Messrs. Gracey, Fowler, Long, Stockton, Marks, and Mrs. Gardiner, Miss Spangenberg, and Mrs. White took part in the discussion. After this Mr. Bernard Marks gave a brief lecture on penmanship, which was attentively listened to and appreciated by the audience. After a recess the musicians sang "Fret not Thyself." The Grube method of teaching arithmetic was explained by W. A. Long. Mr. Marks then by request explained his method of teaching fractions. At the request of the Institute, J. L. McClelland read a lecture on "The Bondage of the Schools," which elicited respectful attention after which the Institute closed for the day with a song.

Friday morning the Institute was called to order at 9:30 A. M. Prof. E. Knowlton of San Francisco was then introduced by the superintendent, and proceeded to occupy the attention of the body during the forenoon with the following programme: 1st. Normal drill—What it is; how it works; who can do it. 2d. Question on discussion. 3d. Normal talking, speaking, reading, etc.

The importance of variety in the daily school exercises received some attention. The teaching of history was briefly discussed. The address was exceedingly interesting. The afternoon session was made interesting by listening to professor Knowlton.

In the evening Garibaldi Hall was crowded with teachers and others. Professor Knowlton entertained the audience for over two hours with the reading of twelve or fifteen selections from books and newspapers, the evening's entertainment being made still

more pleasant by two solos rendered by Miss Otis and a quartet, and other music by Mrs. White, Miss Tackett, Mrs. McClenathan, Mr. Mark Howell, and S. W. Geis. Appropriate resolutions were drawn up and passed, and the Merced County Teachers' Institute closed for 1880.

MARIN COUNTY.

The Novato school opened May 4th, Miss Elizabeth Brody, teacher.

The Marin County Teachers' Institute met Wednesday, April 21st, but the attendance was very slim, owing to the bad state of the roads, and after an interesting address by superintendent Augustine, the Institute adjourned to Thursday. Upon the assembling of the Institute Thursday morning, Mr. P. McHugh was elected secretary. Mr. A. E. Kellogg gave a very clear and able dissertation on teaching. Mr. Hussy of Chileno Valley, gave an illustrated object lesson on colors, being entertaining, and happily illustrating the object teaching. Professor Norton followed with a vigorous lesson in geography, prefacing it with an address on the superiority of this method of teaching. Miss Bean read an essay on methods of discipline and government, which was received with much favor, and awakened general discussion. Mr. Powers spoke on "How to study," and how much home work should be required. Mr. Lehan spoke on department. Miss Peckham discussed spelling, and lead attention to different methods of study. The ladies took part freely, and evinced not only thoughtful consideration of these topics but freedom and facility in expressing their ideas.

Professor Norton continued his lesson in geography, illustrating by diagrams on the blackboard. Superintendent Augustine suggested that teachers might hold occasional, perhaps monthly, neighborhood meetings, for counsel and exchange of ideas relating to their work. Such a meeting for the teachers in and near San Rafael was agreed on, but no time fixed.

Prof. Norton lectured to the Institute and the public, Wednesday and Thursday evenings, on "Mine Building," and the "Conjunction of the Planets."

NEVADA COUNTY.

The Nevada County Teachers' Institute commenced at Washington school-house in Nevada City, on Wednesday, April 28th. After the work of organization had been completed, superintendent Wickes delivered an interesting address. Miss Lawson made an intelligent presentation of the subject of "Primary Arithmetic," and W. R. Byrd gave his views of teaching "Common Fractions." The afternoon session opened with a beautiful vocal solo by Mrs. George Smith, Mrs. J. L. Mann presiding at the piano. Miss Doone read a paper on "Language Lessons." Professor Crowell was the next speaker. He thought much time was wasted in teaching grammar, especially in lower grades. A resolution to strike out grammar from the course of study in Grammar and Primary schools was offered, and a long discussion ensued. The resolution was amended by striking out the words "Grammar Schools." After the third reading of the resolution and various amendments, further action was postponed. Miss Hemenway made some practical remarks on Primary Geography, and brought to bear many pointed illustrations. Professor Kennedy handled the subject of the Quincy System in an able manner. Mr. Power explained various matters connected with book-keeping.

Thursday the Institute was called to order by superintendent Wicks at 9 o'clock. There were but few absentees. J. F. Reilly was appointed critic for the day. Peter Reilly read a well-prepared paper on the necessity of teaching Latin in our grammar and high schools, giving six logical reasons for his position. W. M. Scribner was not in attendance to speak on "Penmanship," and the time that had been allotted to him was profitably spent by several of the teachers giving their views on that subject. S. A. Bulfinch addressed the Institute on the topic of "Phonetic Spelling." He was decidedly in favor of dropping the silent letters employed in the present mode of spelling, and thus simplifying the subject without adopting the new proposed method of destroying our language altogether. Mr. Power held that teachers should be in favor of reform, phonetic spelling would do away

with the perodical revision of our standard works. F. H. McAllister explained his method of phonetic writing clearly, by illustrating on the blackboard. At the afternoon session the subject of "Higher Geography" was treated of by A. J. Tiffany, in such a manner as to show that he understood that important subject thoroughly. Miss Annie Naffziger sang very sweetly, and the music was appreciated by the members. Mr. N. B. Potter favored the Institute with his views on "Percentage," the substance of which was "teach it naturally." J. G. O'Neill preferred to use cancellation. Mrs. George Smith and Miss Kimball delighted the assemblage with a pleasing duet. Miss J. C. Shea brought a class of very small children before the teachers, and the little folks showed that they had been well trained in forms and colors. They did not exhibit any of the fashionable color-blindness. A general discussion on "School Discipline" followed. There were many visitors in attendance during the afternoon. M. P. Stone illustrated in a clear and concise manner his method of teaching decimal fractions. Miss Hemenway read an interesting paper on the teaching of drawing.

Thursday evening C. W. Cross Esq., delivered to a large audience an able and interesting address, taking for his subject: "Teaching now and teaching then."

NAPA COUNTY.

The closing exercises of the Napa Collegiate Institute, which under the conscientious and able administration of president A. E. Lasher now ranks as one of the best conducted and most prosperous academies on this coast, took place in Napa, on Wednesday, May 26. The platform was elegantly decorated with flowers in vases. Upon it sat the graduates, whose feet were soon buried in a parterre of floral tributes. Behind them sat the Faculty and visiting clergy, among whom were, Rev. Mr. Nelson, Rev. Mr. Clifford, Rev. Mr. Todd, Rev. Mr. Taliman, Rev. Mr. Wythe, and Revs. Messrs. Wenk and Fairfield. In the exercises the graduates acquitted themselves well in the following order: Chorus; prayer, Rev. M. Nelson; piano solo, Libbie Vanderlip; oration, "Commerce," Clarence T. Greenfield; double quartet, essay, "What

the future holds," Pearl Kelton; trio, Kate Fowler, Pearl Kelton, Hattie Norton; essay, "The Wealth of Mind," Laura A. Walden; piano solo, Clara Sheldon; oration, "Socialism," Edmund B. Woods; chorus, address and presentation of diplomas by professor S. E. Holden.

The graduates' class consists of the following: B. L. — Pearl Kelton, Laura Walden, Edmund B. Wood, George F. Howard. Commercial Class. — Edward Barber, Clarence T. Greenfield, Frank E. Smith.

The Oak Mound School for boys, of which county superintendent C. M. Walker is the efficient principal, held interesting commencement exercises on the 25th.

ALAMEDA COUNTY.

Miss McCord, one of Hayward's corps of teachers, will enjoy her vacation by taking a trip to Clear Lake.

The closing exercises of the Oakland High School, principal J. B. McChesney, were distinguished for their usual high standard of literary merit and interesting character. We repeat here what we have so often said before in these columns, that Oakland should be proud (and we believe she is), to possess one of the finest institutions for secondary education in the United States.

The graduates numbered twenty-four. In December last, twenty-two had graduated, thus making forty-six for the year.

In proportion to the number of pupils enrolled, this school matriculates more pupils into the State University than any other school on the coast.

The closing exercises of Washington College, at Washington Corners in this county, were excellent in character and well attended. There were the usual literary exercises, and prizes were distributed by a committee of which our old friend, ex-Supt. W. F. B. Lynch, was chairman. This school is still in charge of Rev. S. S. Harmon and his estimable wife.

SANTA CLARA COUNTY.

The Bitterwood School is in the charge of Miss Thomasson of Gilroy.

THE NORMAL SCHOOL.—Despite the disaster by which the Normal School was com-

elled to trust to the generosity of the people of San José for temporary quarters, and the loss of their apparatus and many valuable library books, the session of the school just closed was even more than usually successful and valuable. The graduating class, this year, was large and well prepared, numbering forty-five.

The closing exercises were held in California Hall, San José, and were attended by a great throng of citizens of that place and vicinity. State superintendent Campbell and a number of educational people from abroad were also present. Diplomas and first grade certificates were then presented to the graduates.

A day or two after the commencement exercises an ill-considered resolution of the San José Board of Examiners, to the effect that no city certificates should be granted on Normal School diplomas, caused a clash between the Normal School Faculty and Trustees on one side and the City Examiners on the other, that resulted in the latter body receiving a well-merited rebuke from the people of San José and the Board of Education.

They were compelled to rescind the obnoxious resolution and agree to grant certificates of equal grade to those issued by the Normal School Faculty.

SAN MATEO COUNTY.

Miss Alice Woods is conducting the Alpine District school. This is her second year in the same district.

Alfred Hills, who used to teach in San Mateo county is now teaching in Santa Cruz county.

TEHAMA COUNTY.

Alva McBroom, late teacher in Battle Creek school district, has gone East on a visit to relatives and friends. He will return to Tehama county.

Professor L. Van Fossen of Red Bluff, has tendered his resignation as principal of the school at that place. He has spent several years in that section, and will be missed.

PLUMAS COUNTY.

W. S. Church is teaching at St. Louis, Sierra county.

Miss Goodwin has opened a private school in La Porte, which is well attended.

PLACER COUNTY.

Mr. Panabaker and Miss Allen of Dutch Flat, started a private school as soon as the public school closed.

Miss A. E. Perkins, who has been engaged in teaching at Clipper Gap, has closed her school at that place and opened the public school at Emigrant Gap.

Miss Elsie Buckley, of Christian Valley, has gone to Grizzley Flat, El Dorado Co., to take charge of the school there.

Miss Benniston, who opened a private school in Auburn, immediately after the close of the public school, is meeting with much encouragement.

CONTRA COSTA COUNTY.

The Susanville school has been closed owing to the prevalence of the measles.

SAN JOAQUIN COUNTY.

Dr. S. P. Crawford has been elected city superintendent of Stockton.

William W. Westby, a graduate of the Stockton High School, of 1876, who has been teaching in Merced county for some time past, was appointed cashier of the Merced Security Savings Bank.

The Ripon school, E. C. Dickinson teacher, has closed for the term.

YUBA COUNTY.

Mr. H. C. Babcock, one of the ablest teachers of Marysville, and a member of the new County Board of Education has become interested in a quartz claim near Bangor.

SONOMA COUNTY.

The public schools of Santa Rosa opened May 10th, after a short vacation.

The High School of Santa Rosa has been discontinued. Seven pupils graduated the last term.

Ex-superintendent E. W. Davis was united in the bonds of matrimony to Miss Elizabeth L. Boyd of Santa Rosa, on April 28th.

The public school at Bodega Corners will probably continue throughout the school year, owing to the exertion of the trustees, although the funds have been exhausted.

The people of Freestone are agitating the question of building a new school-house.

The last term of the Santa Rosa High School ended Friday, April 30th, and the graduating exercises took place during the evening. The ceremony consisted of essays by the different members of the graduating class, seven in number, followed by the presentation of an elegant silver cake basket to their teacher, Prof. Dozier, as a token of appreciation from his class. On the stage besides Prof. Dozier and his class, were the Santa Rosa Board of Education, Elder G. O. Burnett, president Finley of the P. M. College, and Rev. A. G. Burnett of Healdsburg. It is to be regretted that the Board of Education have deemed it advisable to dispense with the High School.

MENDOCINO COUNTY.

Mr. N. L. Weeks is conducting the Round Valley school.

Little River school has been closed on account of bad weather and diphtheria.

M. Reynolds is teaching the Bridgeport school.

Miss Ryan of Marysville, has charge of the primary department in the public school at Cuffey's Cove.

STANISLAUS COUNTY.

The Waterford school has been conducted by Miss Ella Houchens this spring.

SOLANO COUNTY.

The public school in Dixon closed on the 21st ult., making the term two weeks shorter than it would have been if the money had not run short.

Prof. M. T. Sickals of Rio Vista, intends to make a tour to Mt. Diablo during the summer vacation, in company with a number of his pupils.

A new school-house is being built in the American Canon School District.

Since Mrs. Atkins-Lynch resumed charge of the Benicia Seminary, that institution has more than regained its rank as the finest private school for the education of girls in this State. In her work of supervision, Mrs. Lynch has been greatly aided by her husband, Hon. John Lynch, who has had a valuable experience as a superintendent of schools in Louisiana. In the closing exercises held at the Benicia Seminary May 26, the musical and literary exercises were far

above the average, reflecting the greatest credit on the management.

The graduating class consisted of Miss Alice Hastings, Benicia; Miss Fannie Hubbard, Sacramento; Miss Ethel Sperry, Stockton, and Miss Georgie Staples, Oakland.

AMADOR COUNTY.

The public school in Ione City has closed, and C. W. Clements the teacher, has opened a private school to fill the gap occasioned by a four months' vacation.

LOS ANGELES COUNTY.

Says the *Semi-Tropic* of Colton: School

matters continue to move along smoothly under the guiding hand of Miss Addie Daley.

KERN COUNTY.

Miss Madden will teach the Bear Valley School this summer.

The Bakersfield public school closed for the term, May 14th.

HUMBOLDT COUNTY.

The Ferndale *Enterprise* has opened an educational department, which is to be conducted by Mr. N. S. Phelps.

NEVADA.

HENRY F. BAKER, Editor, Virginia City.

The special school tax for \$12,500 in Gold Hill was carried by a vote of two to one.

The Storey County Teachers' Institute has been called for the 10th, 11th and 12th of June. Prof. John Swett of San Francisco, and State Supt. Campbell of California have signified their intention of being present.

The Gold Hill High School will graduate a class of ten pupils this year. The Virginia High school graduates but one.

Evan Williams and H. M. Huffaker constitute a committee on revision of the grades of Storey county schools.

A teachers' examination will be held in

Virginia City the first week in July. Those actively engaged in teaching will not be required to enter the examination. Applicants for second-grade certificates are required to pass in reading, writing, spelling, arithmetic, geography, grammar, and theory and practice of teaching. First-grade applicants are required in addition, algebra, natural philosophy, physiology, U. S. history, and chemistry.

A permanent organization of a Storey County Teachers' Association was effected May 8th. Monthly sessions are provided for by the constitution. C. S. Young, county superintendent, is ex-officio president, Miss Ida Lynch was elected secretary, and Mrs. M. H. Swift treasurer.

COUNTY BOARDS OF EDUCATION.

ALAMEDA COUNTY.

O. S. Ingham.....Alameda
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 A. R. Conklin..... Independence
 Daniel Crough..... Independence
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 Supt. F. S. Wallace..... Bakersfield
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 J. H. McEwen..... Sumner
 C. Lindsay..... Tehachipa

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 Supt. Mack Mathews..... Lakeport
 William J. Briggerstaff..... Lakeport
 C. A. Cooper..... Middletown
 Dr. J. W. Connelly..... Guenoc

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 George F. Hall..... Anaheim
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 Supt. W. R. Schooler..... Bieber
 Miss Maggie Ford..... Susanville
 E. Etzehouser..... Bieber
 N. Bieber..... Bieber

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 Supt. Mrs. C. H. Sullivan..... Bodie
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 Mrs. Selden J. Heitzel..... Bodie

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Jas. Harlow..... Tomales
 Supt. S. M. Augustine..... San Rafael
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 Talbot P. Powers..... Saucelito
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Myron Mills..... Hornitas
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 Chas. Converse..... Coulterville
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MODOC COUNTY.

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 Supt. E. P. Grubbs.....Alturas
 G. W. Welch.....Alturas
 Wm. Pascoe.....Alturas
 G. W. Pleasant.....Alturas

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 Supt. J. T. Wickes.....Nevada
 M. Byrne Jr.....Grass Valley
 F. Power.....Grass Valley
 M. B. Potter.....Nevada

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N. A. Morford.....St. Helena
 Supt. C. M. Walker.....Napa
 F. G. Husky.....Monticello
 G. M. Francis.....Napa
 A. D. Butler.....Brown's Valley

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J. M. Lowell... Auburn
 Supt. O. F. Seavey.....Auburn
 S. J. Pullen.....Roseville
 H. C. Curtis.....Rocklin
 A. O. Daman... Colfax

SAN FRANCISCO COUNTY.

N. B. Stone... Palace Hotel
 Supt. J. W. Taylor.....New City Hall
 Geo. L. Darling.....69 Tehama street
 Chas. E. Ewing.....120 Sutter street
 Dr. T. H. Ferguson.....22 Geary street
 S. A. Hussy.....325 Filbert street
 Henry Kimball.....148 Sixth street
 J. J. McDonnell.....15 Sixth street
 H. C. Partridge.....824 Kearny street
 L. Thompson.....1032 Washington street
 H. N. Van Schaick.....129 Page street
 L. Wadham.....1909 Leavenworth street

SACRAMENTO COUNTY.

J. E. Blanchard.....Folsom
 Supt. Charles E. Bishop.....Sacramento
 W. Willis.....Sacramento
 George Smith.....Sacramento
 Miss H. McCormack.....Sacramento

SANTA CRUZ COUNTY.

J. L. Halstead.....Watsonville
 upt. W. N. Noble.....Santa Cruz
 J. W. Linscott... Watsonville
 D. H. Trout.....Felton
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J. W. Swing San Bernardino
 Supt. J. A. Rousseau.....San Bernardino
 M. V. Wright.....Riverside
 C. R. Paine.....San Bernardino
 D. B. Sturges.....San Bernardino

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 Supt. J. S. Wixon.....Downieville
 S. A. Smith.....Downieville
 E. L. Case.....Sierra Valley
 J. H. Thorp.....Downieville

SAN BENITO COUNTY.

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 A. Martin.....Hollister
 W. H. Housh.....San Juan
 Geo. Varcoe.....San Benito

SAN JOAQUIN COUNTY.

W. A. Cowdery.....Linden
 Supt. C. M. Keniston.....Stockton
 W. B. Ambrose.....Lockeford
 E. W. Johnson.....Lodi
 Hiram Hamilton.....Stockton

SONOMA COUNTY.

C. E. Hutton.....Petaluma
 Supt. C. Smyth.....Santa Rosa
 E. W. Davis.....Santa Rosa
 M. Dozier.....Santa Rosa
 C. L. Ennis.....Sonoma

SUTTER COUNTY.

T. B. Hull.....Yuba City
 Supt. O. E. Graves.....Yuba City
 S. H. Raub.....Yuba City
 B. R. Spellman.....Yuba City
 E. O. Larkins.....Meridian

SOLANO COUNTY.

C. B. Towle.....Vallejo
 Supt. A. W. Sutphen.....Vacaville
 A. J. McPike.....Vallejo
 J. T. Wallace.....Dixon
 J. K. Bateman.....Suisun

SAN MATEO COUNTY.

George H. Rice.....Redwood City
Supt. G. P. Hartley.....Redwood City
J. C. Nash.....San Mateo
Etta M. Tilton.....San Mateo
Katie McCarthy....52½ Natoma St. S. F.

SANTA CLARA COUNTY.

A. W. Oliver.....Gilroy
Supt. L. J. Chipman.....San Jose
T. W. Whitehurst.....Saratoga
Wm. F. Foss... Mountain View
T. E. Kennedy.....San Jose

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Supt. Mrs. D. M. Coleman.....Shasta
L. M. Dennis.....Fall River Mills
A. McKillop.....Janesville
J. M. Gleaves.....Redding

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Mrs. Ellen A. Bush.....San Diego
Mrs. E. M. Bacon.....Julian
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SAN LUIS OBISPO COUNTY.

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E. P. Rogers.....San Luis Obispo
C. H. Woods.....San Luis Obispo
J. L. Raines.....Cayucas

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Supt. H. A. Morse.....Yreka
Mrs. McKay.....Yreka
George Rice.....Bogus
W. H. Bower.....Willow Creek

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Supt. George E. Noonan.....Weaverville

A. Wheeler.....Weaverville
J. Lord, M. D.....Weaverville
C. S. Otis.....Douglas City

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Supt. Myron Yager.....Red Bluff
E. S. Gans.....Red Bluff
William Goodell.....Red Bluff
R. H. Bierce.....Red Bluff

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Supt. C. T. Murnan.....Sonora
C. C. Ortega.....Sonora
M. A. Fahey.....Sonora
H. A. Stewart.....Columbia

TULARE COUNTY.

George P. Manley.....Grangeville
Supt. W. J. Ellis.....Visalia
A. B. DuBrutz.....Visalia
S. G. Creighton.....Visalia
Francis Cunningham.....Vasalia

VENTURA COUNTY.

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Supt. D. D. DeNure.....San Buenaventura
C. T. Meridith.....San Buenaventura
B. W. Everman.....San Buenaventura
Miss O. B. Sturges.....San Buenaventura

YOLO COUNTY.

A. M. Ayers.....Yolo
Supt. J. W. Goin.....Woodland
George Banks.....Davisville
J. I. McConnell.....Woodland
F. A. Pedlar.....Woodland

YUBA COUNTY.

H. C. Babcock.....Marysville
Supt. T. H. Steel.....Marysville
E. K. Hill.....Brownsville
D. A. Macphee.....Oregon House
P. S. Larabee.....Wheatland

ANNUAL EXAMINATION OF THE PUBLIC SCHOOLS OF SAN FRANCISCO.

[First Grade—Arithmetic.]

1. Add \$9256.60, \$4482.95, \$1127.50, \$763.92, \$7747.75, and \$962.83. From the sum subtract \$19959.55, multiply the re-

mainder by 768 and divide the product by \$384.

2. Find the length of a cord that will reach from the top of a tree 150 feet high,

to a point on the ground distant 120 feet from the base of the tree. (Ans. to two decimal places.)

3. A rectangular field is $42\frac{2}{3}$ rods wide, and 96 rods long.

(a) How much is the land worth at \$45 per acre?

(b) How much will it cost to fence it, at \$1.20 per running rod?

(c) How much will it cost to surround it with a tight board fence 7 ft. high at 72 cts. square yard?

4. (a) $33\frac{1}{3} + 25$ $4 \cdot 5 + 42$ $5 \cdot 6 - 15\frac{1}{2}$ $-- 20$
 $11 \cdot 12 + 6\frac{3}{4} - 1$ $7 \cdot 20 = ?$

(b) $(2\frac{1}{2} \times 7 - 4 \cdot 5 \times 1\frac{1}{2}) \div (1 \cdot 7 \times 4 - 9 \cdot 10 \times 5 \cdot 6) = ?$

5. A farmer sold 5 loads of hay, which he had weighed at the public scales. They weighed respectively $2785\frac{1}{2}$ lbs., $3056\frac{3}{4}$ lbs., $2907\frac{1}{4}$ lbs., 3000 lbs., and $3172\frac{1}{2}$ lbs. each, including the wagon, which weighed 950 lbs. What is the value of the hay at $\$15\frac{1}{2}$ per ton?

6. A commission merchant receives from a farmer 15 sacks of wheat, on which the weights are marked as follows: 129, 117, 124, 137, 209, 204, 128, 136, 144, 156, 163, 215, 223, 139, 140. He charges five per cent. commission for selling it. If he gets \$2.24 per cental for the wheat, and pays \$3.75 freight, and \$2.65 wharfage, how much money must he remit to the farmer?

7. What is the cost of the following bill of lumber:

42 redwood boards, 16 ft. long and 10 in. wide, at \$18 per M.; 18 sugar pine boards, 16 ft. long and 16 in. wide, at \$50 per M.; 15 scantling 2x3, 12 ft. long at \$20 per M.; 24 scantling 3x4, 16 ft. long at \$20 per M.

8. How many square inches in a circular plate of iron, $16\frac{1}{2}$ inches in diameter?

9. If a reservoir average 350 ft. long, 120 ft. wide, and $6\frac{1}{2}$ ft. deep, how many gallons of water will it hold?

10. (a) 146 lbs. is 8 per cent. of what number? (1 cr.)

(b) 231 oxen is 7 per cent. of what number? (1 cr.)

(c) What is $1\frac{1}{4}$ per cent. of $\frac{3}{8}$ of 5-11? (1 cr.)

(d) If I buy land at \$500 per acre, and sell it at 4 cents a square foot, what per cent. profit do I make? (3 cr.)

[First Grade—Grammar.]

1. (a) What is *case*? (2 cr.)

(b) Write a single sentence in which each case is represented? (2 cr.)

(c) What is a *complement*? (2 cr.)

2. (a) Write four sentences, each containing a verb in a different mood and a different tense. Name the mood and tense of each verb. (4 cr.)

(b) Name two general classes of conjunctions, with examples. (2 cr.)

3. (a) give the principal parts of six irregular verbs.

(b) How is the passive voice formed?

4. Give a synopsis of the verb *fly* in the indicative and potential moods, using as subject the personal pronoun of the third person plural.

5. What is ellipsis? Give an example and explain.

6.

"And I sit and think when the sunset's gold
 Is flushing the river and hill and shore,
 I shall one day stand by the waters cold
 And list to the sound of the boatman's oar.
 I shall watch for a gleam of the flapping sail;
 I shall hear the boat as it gains the strand;
 I shall pass from sight with the boatman pale
 To the better shore of the spirit-land.
 I shall know the loved who have gone before,
 And joyfully sweet will the meeting be,
 When over the river, the peaceful river,
 The angel of death shall carry me."

(a) Case of *river*, *hill*, and *shore*.

(b) What kind of a word is *when*? (1st line.)

(c) Case of *day*?

(d) Mood and tense of *list*.

(e) What kind of a sentence do the last three lines form?

(f) What kind of a word is *before*?

7. Correct the following sentences.

Note—Write the sentences as given, underscore the incorrect word or the error, and write correctly just above.

1. The *Pleasures of Hope* were sold for fifty cents.—2. Every pupil should improve their opportunities.—3. Speak slow and distinct.—4. These kind of men are dangerous.—5. The prisoner wore a warm, a comfortable, and a striped coat.—6. I left him to bear this tidings to his family.

8. Write sentences illustrating the following in order:

1. Noun in apposition. (nominative.)—2.

Noun in apposition. (objective.)—3. Predicate nominative.—4. Adverbial objective.—5. Nominative absolute.—6. Indirect object of a verb.

9. Parse briefly the italicised words in the following sentences :

1. It is your father *who* speaks to you.—
2. Rapidly *athwart* the sky sailed the *storm-clouds*.—
3. Statesmen, like *Cal-*

houn and *Clay* are *rare*.—4. Sugar tastes *sweet*.

10. Write at least half a page on the subject of "The Telegraph."

Note to Teacher—Correct with reference to (1) spelling, capitals, and grammar, (2) arrangement of the phrases in the sentences, (3) arrangement of the clauses in the complex sentences.

BOOK NOTICES.

WORDS AND NUMBERS. A Lesson Book for Primary Schools. By Henry E. Sawyer, A. M., Associate Principal State Normal School, Conn. Boston: Thompson, Brown & Co. 69 pp. Introduction price, 18 cents.

This little book is based on what is known as the "Quincy Method" of teaching. It is designed for the second year in school, and is the only book besides the Reader to be used by the learner during that time. It consists of forty lessons, corresponding to the weeks of the school year.

These lessons are: A motto or sentiment to be learned, and which also serves as the copy for writing lessons. Four short spelling lessons of words with which the children are familiar. Tables in addition, subtraction, multiplication, or division. A number of carefully graded examples for slate work in the fundamental operations. Topics for oral lessons on behavior, hygiene, animals, geography, &c. A few pages of hints, suggestions and models for oral lessons have been added for the benefit of teachers.

Our teachers will find this book of the greatest value; it is in direct accord with well established principles of education and with modern methods of teaching.

We have received from the publisher, S. J. Wheeler, Chicago, a little book of seventy-five pages entitled "An Elementary Guide to Determinative Mineralogy" for the use of the practical mineralogist and prospector, and for instruction in schools and academies, which we have examined with considerable interest. The plan is simple, and the arrangement is such that very little technical knowledge is necessary to make the book a useful companion to any person who wishes to be informed upon matters pertaining to the determination of minerals. It is particularly valuable to residents of the Pacific Coast, and we think it could be profitably introduced as a text-book in our more advanced public schools.

LITERARY NOTES.

SOME ARTICLES FOR TEACHERS IN THE JUNE MAGAZINES.

Harper: A Moorland Village; Working Women in New York; The Country of Luther; Captain Nathan Hale; The Strong Government—George T. Curtis.

Scribner: Spring Hereabouts; Sun-Spots and Financial Panics; Peter the Great; The Cypriote Inscriptions; The Dominion of Canada; Thackeray as a Draughtsman.

St. Nicholas: How to Camp out; Two Famous Old Stones; Something about Musical Ducks.

The Popular Science Monthly: The Classics that Educate us; Hysteria and Demonism; The Crossing of the Human Races; Views of Primitive Marriage; Goethe's *Farbenlehre*—Prof. Tyndall; The Availability of Energy; How Animals Eat.

The Atlantic Monthly: The Unlearned Professions; An Old War-Horse to a Young Politician; Future of Precious Metal Mining in the United States; The Poet and his Songs—Longfellow.

Appleton's Journal: The Shakespearean Myth; Burton's Anatomy of Melancholy; Siberia; A Swiss Novelist.

The Californian: The Inter-oceanic Canal and Geographical Congress; A Practical View of the Indian Problem; The Hawaiian Islands; A Summer in the Saddle.

We take great pleasure in recommending to our teachers the *Christian Union* and the *Independent*, two religious papers without cant, and marvels of cheapness when the quantity and high character of their weekly contents are considered. Science, politics, and general literature are well represented in their pages, and we wonder each week as they come to hand how they can possibly furnish their readers with so much reading matter, of such high quality for \$3 per year.

J. B. Lippincott & Co. have just issued a new and enlarged edition of their unrivalled *Gazetteer*. This new edition contains notices of more than 125,000 localities, covering 2,478 pages.

In the way of supplementary reading, Boston has introduced the delightful story-books published by Lee & Shepard of that city and noticed by us in the *JOURNAL*. The books include Dr. Eliot's book of poetry for young children, such tales as Cinderella, Bluebeard, Jack and the Bean-stalk, Sinbad, etc., related in a simple, attractive style, printed in large, clear type, and well-illustrated.

The *Quarterly Elocutionist* for April is at hand. It is edited by Mrs. Anna Randall-Diehl, the well-known elocutionist, and contains well-chosen and new selections for reading and recitation. Price, \$1 per year, or 30 cents a number.

THE PACIFIC
School and Home
JOURNAL.

ORGAN OF THE

DEPARTMENT OF PUBLIC INSTRUCTION.

Vol. IV.

SAN FRANCISCO, JULY, 1880.

No. 7

LAKE BIGLER OR LAKE TAHOE.

BY PRESIDENT JOHN LE CONTE LL. D.

[University of California.]

SITUATION.—Lake Tahoe, or otherwise called Lake Bigler—the largest and most remarkable of the mountain lakes of the Sierra Nevada—occupies an elevated valley at a point where this mountain system divides into two ranges. It is, as it were, engulfed between two lofty and nearly parallel ridges, one lying to the east and the other to the west. As the *crest* of the principal range of the Sierra runs near the *western* margin of the lake, this valley is thrown on the *eastern* slope of this great mountain system.

The boundary line between the States of California and Nevada makes an angle of about 131° in this lake near its southern extremity, precisely at the intersection of the 39th parallel of north latitude with the 120th meridian west from Greenwich. Inasmuch as north of this angle, this boundary line follows the 120th meridian, which traverses the lake longitudinally from two to four miles from its *eastern* shore line, it follows that more than two-thirds of its area falls within the jurisdiction of California, the remaining third being within the boundary of Nevada. It is only within a comparatively recent period that the geographical co-ordinates of this lake have been accurately determined.

DIMENSIONS.—The greatest dimension of this lake deviates but slightly from a meridian line. Its maximum length is about 21.6 miles, and its greatest width is about twelve miles. In consequence of the irregularity of its outline, it is difficult to estimate its exact area ; but it cannot deviate much from 192 to 195 square miles.

ALTITUDE.—The railroad surveys indicate that the elevation of the surface of its waters above the level of the ocean is about 6247 feet.

DRAINAGE BASIN.—Its drainage basin, including in this its own area, is estimated to be about 500 square miles. Probably more than a hundred affluents of various capacities,—deriving their waters from the amphitheatre of snow-clad mountains which rise on all sides from 3000 to 4000 feet above its surface,—contribute their quota to supply this lake. The largest of these affluents is the upper Truckee river which falls into its southern extremity.

OUTLET.—The only outlet to the lakes is the Truckee river, which carries the surplus waters from a point on its north-western shore, out through a magnificent mountain-gorge—thence northeast through the arid plains of Nevada, into Pyramid lake. This river, in its tortuous course, runs a distance of over 100 miles, and for about 70 miles (from Truckee to Wadsworth), the Central Pacific railroad follows its windings. According to the railroad surveys, this river makes the following descents :

	<i>Distance.</i>	<i>Fall.</i>	<i>Fall per Mile.</i>
Tahoe to Truckee.....	14 miles	428 feet	30½ feet
Truckee to Reno.....	34 “	1322 “	39 “
Reno to Wadsworth.....	35 “	420 “	12 “
Wadsworth to Pyramid Lake.....	18 “	187 “	10 “
Tahoe to Pyramid Lake.....	101 miles	2357 feet	23⅓ feet

DISCOVERY.—There is little doubt but that this is the lake of which the Indians informed John C. Fremont on the 15th of January, 1844, when he was encamped near the southern extremity of Pyramid Lake, at the mouth of Salmon-Trout or Truckee River. For he says, “They (the Indians) made on the ground a drawing of the river which they represented as issuing from another lake in the mountains three or four days distance, in a direction a little west of south ; beyond which they drew a mountain ; and further still two rivers ; on one of which they told us that people like ourselves travelled.” (*Vide.* Report of exploring expedition to Oregon and northern California in the years 1843-44. Document No. 166. p. 219.) Afterwards, when crossing the Sierra Nevada near Carson Pass, Fremont seems to have caught a glimpse of this lake ; but, deceived by the great height of the mountains on the east, he erroneously laid it down on the western slope of this great range at the head of the south fork of the American River. It is evident, therefore, that the Indians had, at that time, a more accurate idea of the mountain topography than the exploring party. On Fremont’s map, the lake is laid down tolerably correct as to lati-

tude, but is misplaced towards the west about one-fourth of a degree in longitude, thus throwing it on the western slope of the Sierra Nevada, and making the head branches of the American river its outlet.

NAME OF LAKE.—Few natural features of our country have enjoyed a greater diversity of appellations than this remarkable body of water. On Fremont's map this lake is called "Mountain Lake," but on the general map of the explorations by Charles Preuss, it is named "Lake Bonplaud," in honor of Humboldt's companion. Under one of these names it appears, in its dislocated position, on all the maps published between 1844 and 1853.

About the year 1850, after California began to be settled in its mountain districts, several "Indian expeditions" were organized by the military authorities of the State. It seems probable that this lake was first named "Bigler" by one of these "Parties of Discovery (probably in 1851), from Hangtown," (now Placerville) in honor of Gov. John Bigler. Under the name of Lake Bigler it was first dedicated in its trans-mountain position on the official map of the State of California compiled by Surveyor-General William M. Eddy, and published in 1853; and thus the name became, for a time, established.

From 1851 to 1863 this name seems to have been generally recognized; for it is so designated on the maps and charts of the United States prepared at Washington.

About the year 1864, the first mutterings of discontent in relation to the name by which this lake had been recently characterized came from the citizens of California. On two occasions it has been brought under the notice of the legislature of this State. During the thirteenth session (1862) of the legislature of California, assemblyman Benton introduced a Bill to change the name of Lake Bigler. This Bill was rejected. The friends of Gov. Bigler did not hesitate to ascribe the desire to change the name of this lake to the inspiration of partisan animosity, intensified among the political opponents of ex-governor Bigler by the state of feeling engendered during the progress of the Civil War.

During the session of the legislature of California for 1869-70, an Act was passed to "legalize the name of Lake Biger." (*Vide*. Statutes of California 1869-70. p. 64.) Notwithstanding this statutory enactment, for the past ten years there has been a very strong tendency in the popular mind to call this lake by the name of "Tahoe." On the map of California and Nevada published in 1874 it is still put down as Lake Bigler; but on the map of the same two states published in 1876, it has the double designation of Lake Bigler or Tahoe Lake. At the present time this beautiful body of water seems to have entirely lost its gubernatorial appellation, for it is now almost universally designated Lake Tahoe. It is so named on the "Centennial Map of the United States," compiled at the General Land Office at Washington, and likewise on the "Map of California," contained in the ninth edition of the "Encyclopædia Britannica," article, "California." Moreover, it is designated Lake Tahoe in the reports and maps of the "Board of Commissioners of Irrigation," published in 1874, as well as in those of the "Water Supply of San Francisco," published in 1877.

The cause of this change of name can hardly be sought for exclusively in the waning popularity of the worthy ex-governor, but rather in the following considerations: (1.) In the strong tendency of the American people to retain the old Indian names whenever they can be ascertained. (2.) In the instinctive aversion in the popular mind to the perpetuation of the names of political aspirants by attaching them to conspicuous natural features of our country; and (3.) In the fact that the State of Nevada designated its portion of said lake by the Indian name.

MEANING OF TAHOE.—The meaning of the name Tahoe is by no means certain. It is usually said to be a Washoe Indian word, meaning, according to some, "big water," according to others, "elevated water," others, "deep water," and others, "fish lake." Whatever may be the meaning of this name, there can be no question but that the Washoe Indians designated this remarkable body of water by some characteristic name, long before the earliest pioneers of civilization penetrated into its secluded mountain recess.

JOHNNY BARTHOLOMEW.

BY THOS. DUNN ENGLISH, M. D., LL. D.

[From *American Ballads*, one of Harpers' Half-Hour Series.]

<p>THE journals this morning are full of a tale Of a terrible ride through a tunnel by rail; And people are called on to note and admire How a hundred or more, through the smoke-cloud and fire, Were borne from all peril to limbs and to lives— Mothers saved to their children, and husbands to wives. But of him who performed such a notable deed Quite little the journalists give us to read. In truth, of this hero so plucky and bold There is nothing except, in few syllables told, His name, which is Johnny Bartholomew.</p> <p>Away in Nevada—they don't tell us where, Nor does it much matter—a railway is there Which winds in and out through the cloven ravines, With glimpses at times of the wildest of scenes:</p>	<p>Now passing a bridge seeming as fine as a thread, Now shooting past cliffs that impend o'er the head, Now plunging some black-throated tunnel within, Whose darkness is roused at the clatter and din; And ran every day with its train o'er the road An engine that steadily dragged on its load, And was driven by Johnny Bartholomew.</p> <p>With throttle-valve down, he was slowing the train, While the sparks fell around and behind him like rain, As he came to a spot where a curve to the right Brought the black, yawning mouth of a tunnel in sight, And, peering ahead with a far-seeing ken, Felt a quick sense of danger come over him then.</p>
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Was a train on the track? No! A peril as dire—

The farther extreme of the tunnel on fire!
And the volume of smoke, as it gathered
and rolled,
Shook fearful dismay from each dun-colored
fold;

But daunted not Johnny Bartholomew.

Beat faster his heart, though the current
stood still,

And his nerves felt a jar, but no tremulous
thrill;

And his eyes keenly gleamed through their
partly closed lashes,

And his lips—not with fear—took the color
of ashes.

“If we falter, these people behind us are
dead!

So close the doors, fireman; we'll send her
ahead.

Crowd on the steam till she rattles and
swings!

Open the throttle-valve! give her her
wings!”

Shouted he from his post in the engineer's
room,

Driving onward perchance to a terrible doom,
This man they call Johnny Bartholomew.

Firm grasping the bell-rope and holding his
breath,

On, on through the Vale of the Shadow of
Death;

On, on through that horrible cavern of hell,
Through flames that arose and through tim-
bers that fell,

Through the eddying smoke and the serpents
of fire

That writhed and that hissed in their anguish
and ire.

With a rush and a roar like the tempest's
wild blast,

To the free air beyond them in safety they
passed;

While the clang of the bell and the steam-
pipes shrill yell

Told the joy of escape from that underground
hell

Of the man they called Johnny Bartholomew.

Did the passengers get up a service of plate?
Did some oily-tongued orator at the man
prate?

Women kiss him? Young children cling
fast to his knees?

Stout men in their rapture his brown fingers
squeeze?

And where was he born? Is he handsome?
Has he

A wife for his bosom, a child for his knee?
Is he young? Is he old? Is he tall? Is he
short?

Well, ladies, the journals tell naught of the
sort.

And all that they give us about him to-day,
After telling the tale in a commonplace way
Is—the man's name is Johnny Bartholomew.

THE ART OF SECURING ATTENTION.*

BY JOSHUA G. FITCH, M. A.

FIRST, let me mention one or two merely mechanical devices for maintain-
ing attention. Of course these are not the highest, but they are some-
times useful nevertheless. For instance, children need *change of posture*. The
restlessness which we often complain of in children is not a fault; it is a consti-
tutional necessity. It is positively painful to them to remain in one attitude
ong. We ought to be aware of this; and occasionally, when attention seems
to flag, let the whole class stand for a short time, or go through some simple
exercise which requires movement. You will often find that in this way your

*This article is an extract from "The Art of Securing Attention," by Joshua G. Fitch, M. A. Published by Davis, Bardeen & Co., Syracuse, New York.

class will be refreshed. When the body has had its lawful claims recognized, the mind will be more at leisure to devote itself to the lessons; the sense of weariness will disappear, and the work of teaching proceed with more cheerfulness. I have often seen teachers and children remain sitting during the whole of a long summer afternoon, and the teacher wondering at the listlessness of his class. But I see nothing to wonder at. Indeed, for myself, I know I cannot teach with vigor and spirit for long together while I am sitting down; and it is hard to expect children to be better in this respect than myself. Dullness and lassitude begin to creep over the mind, and I confess I like to see a teacher stand up, now and then, and throw a little life into his lesson, as well as occasionally cause his scholars to stand up too.

In a small class, also, attention may very often be sustained by causing the children to answer strictly in turn; by making them take places, and by recording the number of times the same boy gets to the top. The little emulation promoted by this plan is favorable to mental activity, and often prevents a lesson from becoming dull. It requires to be rather skilfully managed, and needs a good disciplinarian to conduct it; but I have seen the plan used with very great success, and excite great interest on the part of the children. It is particularly useful in testing the result of your teaching by questions at the end of each division of the subject, as it applies the test with perfect fairness and uniformity to every child in the class.

What is called *simultaneous reading* may also prove a great help in maintaining the interest and attention, especially of a younger class. Of course it must not be practised in a crowded school-room, when the noise would disturb other classes, unless you have tutored your class to read in a quiet and subdued tone (which is a great point in education, and quite worth taking some trouble to obtain). But if it can be adopted, the plan will occasionally relieve a lesson very much. It is always interesting to children to do something in concert; and if the teacher has a sharp eye and a quick ear, he can easily secure that every child shall be thoroughly wakeful and attentive. The exercises may often be well varied in this way. The teacher reads a passage slowly, and with correct tone and emphasis, alone: he then reads it a second time, the class joining with him, and reading in unison. He then asks them to be silent, and to keep their eyes fixed on the book while he reads, and to supply any word which he leaves out. Then he reads the passage, pausing frequently, and omitting a word to be supplied by the children. Lastly, he calls upon one and another separately to read the same passage. The plan of elliptical reading is one of the best I know to stimulate watchfulness and fixed attention on the part of the children. I have seen fifty little ones together, their eyes fixed intently on the book, all eager to pronounce the word omitted by the teacher at exactly the right moment.

There is an indirect method of questioning, too, very familiar to you all, which is founded on the same principle, and may serve a useful purpose in sustaining attention. I mean the use of *ellipses*, as they are called. The teacher, instead of finishing the sentence himself, pauses suddenly, and requires the children to finish it for him. Good teachers, especially those of infant schools,

have long been accustomed to use this method, and have found it very efficacious. Only it must be remembered that it is a device which wants very skillful management. The word left out of the sentence, which the children are expected to supply, should be one which they ought to remember, and it should also, in every case, be a definite word. There should be no vagueness in the teacher's own mind as to what he expects; there should be one way, and only one way, in which the sentence can be properly finished. The word required, moreover, should be one which it requires a little effort to recollect; it should not be the mere echo of the word just uttered. And it is just as necessary in the use of ellipses as in the practice of questioning, to take care that there is no guessing, and no merely mechanical utterance of a word to which the child attaches no meaning. The elliptical meaning is an admirable device for keeping up the attention, especially of little children; but it can never be made a substitute for good questioning, for the simple reason that it only demands a single word, and can never enable you to be sure that the learner understands the whole sentence of which the word forms a part.

Again, one of the greatest safeguards for the attention of the class is the cultivation on the teacher's part of *quickness of eye and ear*. It is surprising sometimes to see teachers addressing themselves to one part of their class, and apparently unconscious that another part is listless and uninterested. They seem incapable of taking in the whole class at one glance. Their eyes move slowly, and they either do not see the disorder and trifling which lurks in the corner of their class, or they do not care to notice what it would give them some little trouble to remedy. A person of this kind will never keep up attention, nor prove a successful teacher, however well he may be provided with knowledge, and however anxious he may be to do good.

What every good teacher greatly needs is a quick eye and a comprehensive glance, which will take in the whole class at one view, or travel instantly from one part of it to the other. He should be able to detect the first rising of disorder, and the first symptoms of weariness, in an instant, and to apply a remedy to it the next instant. It is from want of promptitude in noticing the little beginnings of inattention that our classes so often get disorderly and tired. I recommend every one who wants to be a good teacher, therefore, to cultivate in himself the habit of sharpness and watchfulness. He should so train himself that he shall become peculiarly sensitive about the little signs of inattention. It ought to make him uncomfortable to see one child's eye averted, or one proof, however small, that the thoughts of the class are straying from the subject. The surest way to increase inattention is to seem unconscious of it, or allow it to pass unnoticed. I would have every teacher here ask himself these questions: "Can I *see* the whole of my class? Do I stand or sit so that he slightest movement or whisper on the part of any single child will be apparent to me in a moment? Do the children all know, that whatever happens I am sure to notice it? Do I allow myself to remain at ease during inattention? Have I got used to it by long practice, and become reconciled to it? Or does it pain me to discover even a slight proof of it? Do I, in short, make it a practice never to go on with my lessons until I have recovered attention?"

Unless you can answer these questions satisfactorily, you will always be plagued with inattention. For among the minor characteristics of a successful teacher, few things are so important as alacrity of movement; promptitude and readiness both in seeing and hearing; skill in finding out, at a moment's notice, who is the idlest boy in the class, and in giving him a question, or giving him a verse to read, or making him stand up once, before his mind becomes thoroughly alienated from the subject, and before the contagion of his example has had time to spread among the rest. A sluggish, heavy, inactive looking teacher can never gain the sympathy of children, or keep up their attention long.

A ZOOLOGICAL ENIGMA.

BY FELIX L. OSWALD, M. D.

[From the *Popular Science Monthly* for July.]

WE often hear of the wondrous sagacity—generally ascribed to memory or acuteness of scent—which enables a dog to find his way home by unknown roads, even from a considerable distance. I think it can be practically demonstrated that this faculty has nothing to do with memory, and very little with *scent*, except in a quite novel sense of the word.

Last fall, my neighbor, Dr. L. G——, of Cincinnati, Ohio, exchanged some suburban property for a house and office near the City Hospital, and at the same time discharged a number of his four-footed retainers. A litter of poodle puppies were banished to Covington, Kentucky, across the river, and two English pointers were adopted by a venatorial ruralist in the Eastern part of Ohio. The puppies submitted to exile, but one of the pointers, like the black friar in the halls of Amundeville, declined to be driven away. He returned, by ways and means known to himself alone, once from Portsmouth and twice from Lucasville in Scioto county, the last time in a blinding snow-storm and under circumstances which led his master to believe that he must have steered by memory rather than by scent. But how had he managed it the first time? The matter was discussed at a reunion of sportsmen and amateur naturalists, and one opponent of the doctor's theory proposed as a crucial test that the dog be chloroformed, and sent by a *night-train* to a certain farm near Somerset, Kentucky (one hundred and sixty miles from Cincinnati): if he found his way back, he could not have done it by memory.

The doctor objected to chloroform, remembering that dogs and cats often forget to awake from anæsthetic slumbers; but finally Hector was drugged with a dose of Becker's elixir (an alcoholic solution of morphine), and sent to Somerset in charge of a freight-train conductor. The conductor reports that his passenger groaned in his stupor "like a Christian in a whisky-fit;" at length relieved himself by retching, and went to sleep again. But in the twilight of

the next morning, while the train was taking in wood at King's Mountain, eighteen miles north of Somerset, the dog escaped from the caboose and staggered toward the depot in a dazed sort of way. Two brakemen started in pursuit, but, seeing them come, the dog gathered himself up, bolted across a pasture, and disappeared in the morning mist. At 10 A. M. on the following day he turned up in Cincinnati, having run a distance of one hundred and forty-two miles in about twenty-eight hours.

Still the test was not decisive. The dog might have recovered from his lethargy in time to ascertain the general direction of his journey, and returned to the northern terminus by simply following the railroad-track backward. The projector of the experiment, therefore, proposed a new test with different amendments, to be tried on his next hunting-trip to central Kentucky. On the last day of January the dog was sent across the river, and, *nem. con.*, the experimenter fuddled him with ether, and put him in a wicker-basket after bandaging his nose with a rag that had been scented with a musky perfume. Starting with an evening train of the Cincinnati Southern Railroad, he took his patient southwest to Danville Junction, thence east to Crab Orchard, and finally northeast to a hunting rendezvous near Berea in Madison county. Here the much-traveled quadruped was treated to a handsome supper, but had to pass the night in a dark tool-shed. The next morning they lugged him out to a clearing behind the farm, and slipped his leash on top of a grassy knob, at some distance from the next larger wood. The dog cringed and fawned at the feet of his traveling companion, as if to conciliate his consent to the meditated enterprise, and then slunk off into a ravine, scrambled up the opposite bank and scampered away at a trot first, and by and by at a gallop—not toward Crab Orchard, *i. e.*, southeast, but due north, toward Morgan's Ridge and Boonsboro—in a bee-line to Cincinnati, Ohio. They saw him cross a stubble-field, not a bit like an animal that has lost its way and has to turn left and right to look for landmarks, but, "like a horse on a tramway," straight ahead, with his nose well up, as if he were following an air-line toward a visible goal. He made a short *detour* to the left, to avoid a lateral ravine, but farther up he resumed his original course, leaped a rail-fence, and went headlong into a coppice of cedar-bushes, where they finally lost sight of him.

A report to the above effect, duly countersigned by the Berea witnesses, reached the dog's owner on February 4th, and on the afternoon of the following day Hector met his master on the street, wet and full of burrs and remorse, evidently ashamed of his tardiness. That settled the memory question. Till they reached Crab Orchard the dog had been under the full influence of ether, and the last thing he could possibly know from memory was a *misleading* fact, *viz.*, that they brought him from a southwesterly direction. Between Berea and Cincinnati he had to cross two broad rivers and three steep mountain-ranges, and had to pass by or through five good-sized towns, the centers of a network of bewildering roads and by-roads. He had never been in that part of Kentucky before, nor even within sixty miles of Berea. The inclination of the watershed might have guided him to the Kentucky river, and by and by back to Ohio, but far below Cincinnati and by an exhaustingly circuitous route.

The weather, after a few days of warm rains, had turned clear and cool, so that no thermal data could have suggested the fact that he was two degrees south of his home. The wind, on that morning, varied from west to northwest; and, if it wafted a taint of city atmosphere across the Kentucky river mountains, it must have been from the direction of Frankfort or Louisville. So, what induced the dog to start due north?

“Instinct.” Of course, but the demands of science are not to be satisfied with conventional phrases. Blind instincts we may call such feelings as hunger, the craving after fresh air, and other promptings of our internal organs; also, perhaps, the faculty of executing such uniform mechanical functions as the construction of an hexagonal cell or of a spheroid cocoon; but, if such faculties have to adapt themselves to variable and uncertain circumstances, they require the aid of a sense—*i. e.*, of a *discriminative* organ. So the question comes back upon us, what sense aided the dog in the choice of his direction? Scent? It seems too impossible, though the assumption of a “sixth sense” would be the only alternative. A blind man finds his way through the mazes of a city, or an intricate system of halls and corridors, by what we might call locomotive memory—*i. e.*, the faculty to remember a long series of turns in their due sequence and with the correct intervals of time or space. The sense of touch becomes here vicarious to eyesight. In the same way a wide-awake animal might take cognizance of certain locomotive data without the assistance of its eyes. It might *feel* the turnings of its rolling cage, and remember enough to imply the general direction. A stupified animal could not do it. The olfactory power of a dog exceeds ours about as much as human eyesight exceeds that of a shrew-mouse. A dog will “set” a covey of partridges across a broad field, and can scent a tramp from a distance of half a mile. A nose that can track the faint scent of a rabbit through thickets of aromatic herbage might easily distinguish the atmosphere of a reeking manufacturing town at a distance of ten miles. At fifty miles it might be barely possible under the most favorable conditions of wind and weather; at one hundred and fifty miles it seems impossible under all circumstances. Besides, a dog would find his way to a backwoods cabin as readily as to a smoky metropolis. The question still recurs: How does he manage it? Should dogs be gifted with the faculty of determining geographical latitude and longitude by means of their noses?

METHOD OF TEACHING OPERATIONS IN FRACTIONS.

BY A. W. KERR.

[Plymouth, Amador County.]

THE accompanying diagrams and models or patterns will illustrate a simple plan of presenting to pupils my method of dealing with common fractions. I have used the models in connection with the diagrams for quite a

number of years, and have met with better success than with any other method that I could devise. In my experience in teaching I have discovered this one great truth, that children will learn a principle with greater ease, and comprehend it more readily, when it is presented to them by means of objects, than by means of abstract numbers.

Millions of dollars are expended yearly for patterns, diagrams, and drawings, for every department of industry. The mechanic must have his patterns; the sculptor must have his nude model. The beautiful houses, churches, and palaces that adorn our cities, are all built after some draft or pattern created by an intelligent architect at great cost. The fleets and floating palaces that plow the ocean, are constructed after a model. The forts that defend our country are built after plans devised by the best engineers and most talented mathematicians. The goods and wares of the merchant, the beautiful carpets, curtains, and drapery that embellish our parlors, and make our homes attractive, are all fabricated after patterns. So too the master musician, who sweeps the keys of the piano, and produces the stirring strains and sweet melody which lift the soul into a higher life, must have his model before him in the shape of sheet music. Therefore can any one object to a simple method of presenting to children an easy way of dealing with common fractions by means of models and diagrams?

I place upon the black-board three circles of the same size. The circles drawn on the board correspond to the models which are cut out of heavy paste-board. They may be made of paper. After having divided one of the circles into three equal parts, I erase one of the parts as shown in the diagram, and corresponding to the model from which $\frac{1}{3}$ is removed.



After having divided one of the circles into four equal parts, I erase one of the parts as shown in the diagram and corresponding to the model from which $\frac{1}{4}$ is removed. To illustrate and make it plain, so that they will clearly perceive that thirds and fourths are not of the same size, or




fractional unit, I take up the model from which one-third is removed, and apply to it the one-fourth cut from the other model, or wheel, as I often call it when I am talking to my class, and it will take the direction as indicated by the dotted lines in the diagram, plainly showing that it will not fill up the open space from which the one-third has been removed. And to make it still plainer, I take up the model representing the three-fourths and apply to it the one-third cut from the other wheel, and it will take the direction indicated by the dotted line in the diagram, showing that a third is



larger than a fourth. Now how can we add $\frac{2}{3}$ and $\frac{3}{4}$? By reducing them to the same size; that is, by cutting the thirds and fourths into pieces of the same size, or reducing them to fractional units of the same value. We readily observe that 12 is the least common denominator, or least common multiple of 3 and 4. In order to reduce two-thirds to twelfths, we cut each third into four equal parts which gives eight pieces or $\frac{8}{12}$.



Also to reduce fourths to twelfths we cut the fourths into three equal pieces, and by so doing we reduce three to twelfths as indicated in the diagram

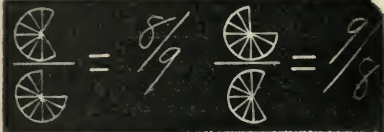
 which gives $\frac{9}{12}$. By turning the models over, the pupil will see that they are marked into 12 equal parts, which make up the unit. They will also notice that a third contains four-twelfths, and a fourth contains three-twelfths.

After the fractions have been reduced they may be added or subtracted or one divided by the other, as shown in the diagrams.





$$\frac{1}{3} + \frac{1}{4} = \frac{7}{12} \quad \frac{1}{3} - \frac{1}{4} = \frac{1}{12}$$

And division may be indicated by the models, thus :



$$\frac{2}{3} \div \frac{3}{4} = \frac{8}{9} \quad \frac{2}{3} \div \frac{3}{8} = \frac{4}{9}$$

It is difficult to represent multiplication by the models or diagrams, but I proceed in the following manner: I draw upon the board a diagram representing $\frac{2}{3}$ and propose to multiply it by $\frac{3}{4}$, which is the same as finding the three-fourths of two-thirds. We first find the one-fourth of each third, as indicated by the dotted lines, and comparing the parts cut off by the dotted lines with the model, we readily find that they are twelfths, and by setting off three-fourths of each third by dotted lines we have six pieces, 

 or $\frac{6}{12}$ as indicated by this diagram. Many other examples might be given to illustrate multiplication of fractions by diagrams, but the above is sufficient.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[Santa Barbara County.]

CHAPTER XII.—THE BOARD OF EDUCATION.

THE supervisors of Santos county held a meeting on the last day of April, to appoint a Board of Education.

"It becomes us," said one of the supervisors, "to listen to the voice of the people, in this, as in all our actions. The people are oppressed with taxes, and they clamor for a reduction of expenses. They say that teachers' wages have been kept up by putting all the power of examining teachers in the hands of teachers only. Now the new law by saying that only two of the four appointed members of the Board of Education need be teachers, seems to advise us, indirectly, to appoint two others who are not teachers."

"It seems desirable to me that one of the members of the Board should have a good knowledge of law," said another supervisor. "Knotty questions may arise, and if they have a lawyer on the Board he can guide them aright, or at least show them what the law is. Therefore I nominate my friend, Mr. Twist, as a member of the Board of Education."

"It seems to me," said the third supervisor, "that our schools need a moral element in their control. I will therefore put in nomination one who has seldom failed to be on hand at our school exhibitions; who has, from the pulpit, given us many instructive remarks upon the subject of education; and who has had much experience in teaching—in the Sunday-school—the Rev. Joshua Barnes. As both he and Mr. Twist have considerable time at their disposal they can afford—living as they do in the city—to attend to the business of the Board much more cheaply than those who do not reside here, or whose time is more fully occupied."

Having thus provided for the law and morality of the Board, the supervisors began to consider what two teachers holding first-grade certificates it would be best to appoint. Prof. Cameron's name was suggested, but as he was going away very soon he was not appointed.

"Allow me to suggest the name of John Dean," said judge Johnson. "He lives no farther from the city than I do, and I think he will not regard pay as of so much importance as a position where he can aid the cause of education. Besides, if you appoint the entire Board from the city alone, it might look like slighting the country portion of the county."

As the last argument was considered unanswerable, John Dean was duly appointed a member of the Board of Education.

"Perhaps it would be well to appoint a lady teacher as the other member," suggested one of the supervisors. "A woman's gentle influence you know—"

"A lady will hardly desire to sit on a Board with four gentlemen, even if one of them is a preacher," said the judge, who was no admirer of the fair sex, politically.

"I have known ladies who would n't mind sitting on a board or most any where else with as many gentlemen as they could gather around them," retorted the supervisor, which remark was vigorously applauded.

"There is Prof. Mills who got a first-grade certificate several years ago. He taught school a year or two, and he has taught music for a long time. I guess he will pass as an experienced teacher, for I suppose school teachers get considerable experience in a very little time."

"My daughter takes music lessons from him, and he seems to be quite a nice young man. He plays and sings in our church, so the preacher and he will doubtless pull together pretty well," said another supervisor.

"All right. We will appoint Mr. Mills then," said the third supervisor. "I don't suppose his music scholars keep him very busy, and no doubt he would welcome a little addition to his salary."

"I heard say that the publishers of — Readers made Prof. Mills an offer of \$100 if he could get their books introduced here," said an outsider.

"Oh! section 1879 forbids his accepting anything of that kind if he is on the Board of Education," was the innocent reply. As that removed the objection Prof. Mills was declared duly elected a member of the Board of Education.

Thus it happened that John Dean was the only member of the Board that was a practical teacher, for though Prof. Mills had taught a term or two, he had discovered several things which led him to become a teacher of music. First, it was hard work to teach school, and he did not admire hard work. Besides this he could make more money, find steadier employment, and work less hours by teaching music. In fact there are few employments that would not pay better wages in money than most teachers can get, if one capable of becoming a good teacher, should devote to that other employment the same time, money, and enthusiasm that are so little appreciated by the people.

The supervisors having performed what they considered their duty, adjourned, and the judge notified the four men appointed to meet in his office the next day to organize.

When John Dean was told who were the other members of the Board his first impulse was to decline to serve; but after a little consideration he determined to stay on the Board and see if he could not bring the others to his own ways of thinking.

Now when a man of strong convictions, and with intelligence to back those convictions, determines to "run a Board," he generally succeeds. Most people are like a child's house of blocks—a slight push determines the side on which they fall.

At ten o'clock on Saturday, May 1st, the superintendent and the four appointed members met in the superintendent's office, and proceeded to organize. Rev. Joshua Barnes was elected president, and then the question of classifying themselves, by lot, for the long and short terms, was considered.

"Let's settle it by a game of euchre," proposed Mr. Twist.

"Where is your dice-box, judge?" inquired Prof. Mills.

"We might toss up four-bit pieces and see which two come nearest a given crack," suggested the minister, smiling.

"I'll jump with you for the long term Prof. Dean," said lawyer Twist in a bantering tone, for the lawyer prided himself upon his agility.

"I'll jump with you after we get through our meeting," said John. "But I think that way of settling the length of our terms, would hardly comply with the law."

While they had been talking the judge had written on four cards which he now laid face downward and motioned the others to draw.

"There is always luck in a first venture" said the minister drawing a card. "The short term. I suppose it was fore-ordained that I should have but one year of service."

"I'll bet two to one that I get a long term," said lawyer Twist. "And here it is," holding up the card he had drawn, and waving it triumphantly.

"I will show you the power one may get from the denizens of another sphere," said Prof. Mills. "I close my eyes, stretch my hand to the right card, thus," lifting it up and opening his eyes. "Ah! she played a trick upon me that time, or else your guardian spirit was the stronger, Prof. Dean."

"Do you really believe in guardian spirits Mr. Mills?" inquired John Dean.

"Certainly. I can see them. I often converse with them," asserted the other.

"Your stomach must be disordered. You should consult a doctor," said John, gravely.

The professor shook his head, but remained silent.

The question of a change of text-books was now discussed, and it was agreed that the Board should advertise for proposals to furnish text-books on all the subjects taught in the public schools in the country.

"If we advertise for an entire change of text-books, may be some of those books which we do not desire to change will be offered to us on better terms," said the minister.

It was voted to meet on the last Saturday of each month, though John Dean suggested that four times a year would suffice.

"Numbers of things may arise which it will be necessary for us to attend to," said Prof. Mills, "and the per diem allowed us is so small that the county need not complain of the expense."

The president was directed to procure an official seal, and a suitable book in which to keep a record of the proceedings of the Board. Lawyer Twist was directed to prepare a set of rules for the government of the Board, to be submitted at their next meeting.

At John Dean's suggestion it was agreed that the semi-annual examination of teachers should begin on the first Thursday of June and of December. This would avoid holiday times, give the successful applicants time to seek spring and summer schools, and leave examiners who were obliged to close school to attend the examinations one more day for teaching, than under the former law. It seldom happens in the smaller counties that more than two days are needed for the examinations, and if there should be one or two desiring a first-grade certificate the examination might be continued on Saturday. John Dean had written out a set of rules for the examination of teachers which he offered for adoption, and which provoked considerable discussion.

"Since our certificates say that the holder has a good moral character," said John Dean, "I would suggest that among the preliminary questions we ask the applicants to state whether they use tobacco in any form, or spirituous liquors, or profane language. The spectacle of a teacher puffing vile segars, or reeling under the influence of liquor, should become a thing of the past."

"Why not include questions on the use of powder and corsets, for the benefit of the other sex?" suggested the minister who used tobacco and wine rather immoderately.

"Write a Band of Hope pledge, and require every applicant to sign it," said Mr. Twist. "And we'll prohibit corsets and the barbarous practice of

* Wearing pendles in their lugs,*

too, professor. A woman who will persist in squeezing herself instead of resorting to more natural methods should not be upheld by any member of this Board.'

After some further discussion it was agreed to insert such questions in the preliminary papers but the minister said he was afraid it would bring untruth-

ful answers from many of the applicants. It required considerable work for John Dean to persuade the other members of the Board that eighty per cent. was not too high for a second-grade certificate, and ninety per cent. for a first-grade. This standard was at last adopted. They also agreed that a candidate failing to receive eighty per cent. in arithmetic, grammar, reading, or spelling, should not receive a first-grade certificate, nor should one who received less than seventy per cent. on any of those studies, receive any certificate. The latter rule was also adopted in fixing the grade of certificates granted under section 1775. It was further agreed to increase the credits of applicants by as many per cent. as they could prove years of experience in teaching—ten school months actually taught, to be counted as one year of experience. Most of the other rules adopted, were taken, with but few changes, from those recommended by the former State Board, and from suggestions which John made about the distribution and manner of giving credits, which were similar to the views expressed in a previous chapter (VII) on examinations. John was asked to prepare a set of questions to submit to the Board at their next meeting, May 29th. The Board then adjourned.

REWARDS AND PRIZES.*

BY HELEN F. SPALDING.

[Portland High School.]

TRUE effort in any direction aims at ultimate results. The question of progress is not one of expediency or facility, but that of securing the best possibilities in the end. Much that would serve well the purpose of to-day, might infringe upon, or retard the work of to-morrow; means that would facilitate immediate effect, might be entangling or pernicious to consequences more remote.

These statements, true as they are to all vocations or professions, are eminently so to the teacher, inasmuch as teaching is almost entirely with reference to remote demands. The teacher is constantly confronted by what has been called "the element of uncertainty," an unknown quantity which represents the needs and demands of "twenty years hence." A problem arises for solution, depending on but few known conditions, and the few that are known must be general, not specific. Pupils are to fit for the requirements of life, yet no one can tell what those requirements may be. We are thus left to find, from variable and indeterminate quantities, a value of x , that shall satisfy present conditions, and endure the verification of time and experience. The only means by which this can be done, is to accept certain absolute truths as axioms or postulates, and base all reasoning thereupon. Of these, the following are

*An Essay read before the Oregon State Teachers' Institute, August 28, 1879.

among the most important: The quality of the motive gives the quality of the art. True growth is from within outward, not from without inward. Natural means produce natural and permanent results; artificial means produce artificial and temporary results. Given: Average mind, refinement of conscience, and true self-respect; combine these with well-directed application, hearty development is the result. Given: Average mind, want of true delicacy, and over-estimate of self; combine these with ill-directed application, inflation or deformity is the result. And so we might go on through every possible combination of conditions, and the nature if not the exact value of the unknown quantity may be easily obtained.

The problem is now open, and on the fundamental principles herein enumerated, the purpose of this paper is to impugn the system of Rewards and Prizes that has become so prevalent in modern schools, both public and private; a system which is rapidly usurping the power of noble aspiration, and, too often, it may be feared, the power of conscience.

Exceptions may be prefaced, in favor of a modified system for little children whose conceptions of the relation of cause and effect are not yet awakened, and for whom the highest purpose of school-life is to amuse and please. Even with them the distribution should be as nearly universal as conscience on the part of the teacher will allow. Any exercise thereof that should awaken the least tendency toward distinction, except in the simple matter of right and wrong, or of the performance or non-performance of child-duty, is to be studiously avoided.

The only argument of which the advocate of Rewards and Prizes can boast, is that it promotes a spirit of emulation; that it encourages the *weak* and enables them to attain results which otherwise were unattempted or unconceived. But the force of this argument is impaired when we consider that the prize is just as emulative to the strong as to the weak, and all effort to the contrary, the distance of natural ability and natural application between the weak and the strong is just as great at the end of the race as it was at the beginning. Again, it may be urged that society everywhere recognizes the efficacy and the necessity of this system. States award prizes to their most successful producers; nations, to their most skillful competitors; West Point sanctions them by rewarding by promotion; the Life-saving Service stimulates the vigor of its employees by salvage, and so on. True. But is the influence upon society, service, or students any argument in favor of the means employed, or any compliment to the system? Would you or I be willing to rest under the implication that we could be actuated by rewards and prizes, or coaxed into doing our best? Would you or I be willing to infuse into pupils this inordinate love of petting and praising, at the risk of making them helpless or incompetent without it? What notes or cares the world for any or all of these things until the individual has attested to his own worth or worthlessness under the rigid tests which the world applies.

Farther, while societies, and schools, and other organizations persistently adhere to the old-timed system, the tendency of progress, the tendency of ad-

vanced thought is to renounce it ; and this, after all, is the real test of its importance.

Theology has been unable to stand on so narrow a basis as that of special and prescribed rewards ; political economy is struggling to disarm itself from protection, or any other artificial prop ; philosophy ignores the scheme ; science, all nature is a potent argument against it ; republican institutions are founded on principles immeasurably remote therefrom ;—and yet, all that is highest and best to the contrary, public schools, the bulwark of our nation, help to perpetuate this abnormal force.

Without presuming to act either as censor or casuist, and with due deference to the excellent management of our city schools, I feel constrained to say that, in my judgment, the "Star and Badge" system that has become a prominent feature of our schools during the year just past, is un-American in its political phase, and obnoxious to a high ideal of character. It recognizes distinction of classes ; it engenders littleness and pettiness on the part of aspirants ; it administers medicine where hygiene is needed ; it appeals to judgment on the part of umpire, concerning helps, motives, and contingencies, that must approach well-nigh to omniscience ; it invites the interference of selfish parents, and offends the judgment of those more refined ; it dwindles the perceptions of pupils—and teachers too—to the matter of mint, anise, and cummin, and neglects the weightier principles of growth and of law ; it discourages those who lose, and inflates those who win ; it presents to ambition a pretentious and meagre consideration ; and more,—it educates pupils to a sort of sugar-plum support, that must melt and dissipate before the rebuffs of an exacting world.

But, allow for argument, that prizes are to be awarded in the school-room. For what shall they be given ? For morality ? The very spirit in which they are given, received, and used, may contain the essential elements of incipient immorality. Shall it be for results in examination ? Who shall tell the means whereby these results have been acquired ? Who is sufficient to sit in judgment upon all the contingencies (even could they be known), or exigencies of which these results are the outcome ? Many a child has received a reward for having gained a "high per cent.," who has sapped the body and soul of teacher, parent, and friend, in his lazy efforts to obtain it. And yet this very child will vaunt himself of his achievements, over the faithful, self-reliant pupil who aspires to no other attainment than honest effort after truth, and will employ no other means than his own unaided exertions.

As the race is not always to the swift, so the prize is not always to the deserving. The effect is often most pernicious on the one who receives it. Better, a thousand times better to hold a keen conscience and a loyalty of purpose which can never swerve from the right, than to have the wealth of India as a prize, at the sacrifice of them.

The marking of daily standing, the awarding of diplomas, may be used to the same end, naturally, as prizes ; but such is not their legitimate purpose, and they should not become so perverted. The marking of a recitation is a simple record. It is *quid pro quo*. The pupil makes the record ; the teacher notes it.

The awarding of a diploma is a simple certificate of a contract honorably closed. It is a matter of equivalents, and nothing more. Whenever it signifies more than this, its value is debased and the granting of it should be withheld or suspended.

How then may a healthy spirit of emulation be encouraged? Is there not danger of carrying this matter to the extreme that pupils will imbibe the pessimistic belief, that it is of no use to do one's best? Shall there be no appreciation of honest worth? no recognition of merit?

We answer yes: and in this very fact lies the secret of true emulation. No one can emphasize too strongly the theory of Herbert Spencer, in his admirable treatise on "Education," of adhering to natural results. The natural result of excellence is progress; of negligence, failure. The natural result of integrity is the confidence of society and a consciousness of growth. The natural result of search after truth is truth itself. The natural result of sterling character is, politically speaking, perpetuity of the principles of freedom; with reference to the universal it is development toward the absolute. What need of prizes and rewards, with incentives like these?

The child who has honestly gained a standing of eighty-five per cent. should be satisfied with eighty-five per cent., without any badge or means that shall tell of his excellence; and, if, in gaining it, he has also gained the desire thus to proclaim it, better by far, had he made a poorer mental record and retained the old-fashioned jewel of modesty.

The present danger is not that the effort of pupils shall be underrated; it is that modest estimate of self, upright social intercourse with associates, and steadfast adherence to principle shall slowly but manifestly slip before the gloss and glitter of shorn morality. Many a pupil has completed a full course of study—brandishing before the world some reward or prize or present—while his record in association with others, his influence upon the aggregate of school life, is a stigma that time cannot efface.

Do you say that this theory of natural results is an ideal? Be it so, so much the better. We want ideals, high and true ones. The progress of the world is its attraction toward an ideal. The Sermon on the Mount, the Lord's Prayer, each is an ideal, unto which the struggle of eighteen centuries has been unable to attain. Inflexible and severe each says to humanity, "You can never rest, you can never be satisfied till you have come to me. I cannot bend to you."

Call it ideal if you will, but it is the province of the educator to lead toward an ideal, with laws as silently severe as those of nature itself. If pupils were taught from the beginning to work for the good they may attain, if from the first, they were inspired with that love of growing, and knowing, and attaining, which bears its own reward,—it would bring about a moral and intellectual reform such as the world has never witnessed.

This record upon life itself as the only true standing,—and it is possible so to impress this fact upon the mind of the pupil as that it shall be unto him one continual source of inspiration—from Nature's own fount.

AT THE COFFIN OF OUR FIRST-BORN.

BY GEORGE GOSSMAN, A. M.

[From the German.]

THESE six small boards—a pillow at thy head,

A wreath of flowers—a sheet as white as snow,

Are all, my child, that form thy little bed—
Alas, my heart, and must I think this so!

My darling child is dead—to wake no more!
And never more with babbling words shall come

To meet me laughing at the open door,
Or break the silence of an empty home.

In all my dreams there was a place for thee—
In all my plans the faith of parent's love—
And every hope in life was dear to me,
Or future good, I thought thee worthy of!

He's gone forever, say the bitter tears
I now feel coursing down my fevered face;
And gone the plans and hopes of coming years,

Yea, all enclosed within this narrow space!

And thou too kneeling there, once loving bride,

Arise, before this coffin let us stand;

Come take the place you once held at my side,

That I as then, may clasp thy cherished hand.

As once, we happy at the altar stood,
To be through life in joy and sorrow true,
And *one* to be through evil and through good:

So let us here the vows of then renew.

And here, alone, within our silent home,
No two have ever stood in holier place,
Nor has a deeper language ever come
From lips of priest, than speaks this silent face.

Indeed, here are the tapers and the flowers,
And here the altar stands—our dead child's shrine;

But to recall the vows that then were ours:—
My sorrows should be yours—and yours be mine.

Farewell, my son, the last— one more—
there—so!—

But see dear mother how he calmly sleeps;—
Come take thy parting kiss—the last below;
Poor heart, she loved him so—she stays—
and weeps!

THE EXILE.

BY GEORGE GOSSMAN, A. M.

[From H. Heine.]

WHEN I pass thy home in the morning,
Oh fairest of the fair!

I see thee alone at the window,—
Am glad to see thee there.

Thy dark eyes they gaze at me and say:
Why art thou so pale and wan?

Who art thou? and what aileth thee?
Thou pale and sickly man?

Indeed I am a German poet,
My home's beyond the Rhine;
And when the greatest names are mentioned
They also mention mine.

"*What is it that ails thee,*" thou askest,
And causeth thee to pine?—

'Tis when my country's ills are mentioned
They also mention mine.

GEOGRAPHICAL COMPOSITIONS.

BY JOHN SWETT.

[Principal Girls' High School, San Francisco.]

"MY NATIVE PLACE."

In your description use the following "outlines," making a paragraph out of each heading. Mark a new paragraph by beginning the first line half an inch to the right of the left hand margin. At home, ask your parents what you do not know.

1. SITUATION. { Name of place ; in what State and county ; on what river, lake, bay, or other water ; near what city or town.
2. DESCRIPTION. { Size, population, trade, railroads, steamers, ships, mills, factories, farm-products, lumber, live-stock, etc.
3. SPECIAL. { Mention any objects of special interest, such as mountains, parks, gardens, buildings, etc. Close with any interesting event in the history of the place.

THE STATE IN WHICH I LIVE.

1. *Situation and Size.*—In what part of our country ; boundaries ; comparative size ; area in square miles.
2. *Resources.*—Farm products ; live-stock ; mines ; manufactures ; commerce, etc.
3. *Climate.*—Hot or cold ; healthful or otherwise ; snow, rain, etc.
4. *The Inhabitants.*—Population ; occupations, etc.
5. *Cities.*—Name the capital, and two or three chief cities, telling the situation of each, and stating something interesting about each.
6. *Historical.*—When, where, and by whom was the State settled, adding any other facts of interest.

Compositions to be written at home, and read in the class as a reading lesson. Pupils will question their parents about facts required.


OUR COUNTRY.

Study your geography. Make a paragraph out of each "heading."

1. *Situation and Size.*—State in what part of the world ; area, length and width ; boundaries.
2. *Physical Features.*—Its three great natural divisions ; chief mountain systems ; five great rivers ; great lakes.
3. *Political Divisions.*—Number of States and Territories ; sections, or groups into which they are divided.
4. *Resources.*—Sources of wealth, such as mines, forests, fisheries, manufactures, farm products, commerce, etc., and the leading pursuits in the different sections.
5. *Climate.*—Of the northern belt ; southern ; plateau region ; Pacific Coast.

6. *Commerce*.—Chief exports and imports ; the great commercial cities.

7. *Historical*.—When settled and by whom : when made a nation ; the people and government.

 *Teachers will require the corrected and re-written compositions to be read in class, as a reading lesson.*

CAUSES OF THE GULF STREAM.

BY DR. WILLIAM B. CARPENTER.

[From an article in the *Nineteenth Century* on "The Deep Sea and its Contents."]

THE "Challenger" investigations have now, I think, afforded the requisite data for the final solution of a question which has been long under discussion—what, namely, the Gulf Stream (or Florida Current) *does*, and what it *does not*, for the amelioration of the climate of north-western Europe. All the best hydrographers, both of this country and of the United States, agree in the conclusion that the Florida Current dies out in the mid-Atlantic, losing all the attributes by which it had been previously distinguished—its movement, its excess of warmth, and its peculiarly deep color ; and that it then degenerates into a mere surface drift, the rate and direction of which depend entirely upon the prevalent winds. But, on the other hand, most conclusive proof has been obtained by the systematic comparisons of sea and air temperatures along the western coasts of north-western Europe, that the amelioration of its winter climate is due to the afflux of water of a temperature considerably higher than that of the air. It has been urged with conclusive force by Admiral Irminger (of the Danish navy) that nothing else can account for the openness of the fiords and harbors of the indented coast of Norway, even beyond the North Cape, through the whole winter ; whilst the opposite coast of east Greenland, ranging, like it, between the parallels of 60° (that of the Pentland Firth) and 72° N., is so blocked with ice throughout the year as only to be approachable in exceptionable summers. And this view has derived full confirmation from the observations systematically carried on under the direction of professor Möhn of Christiania (the noble head of the Meteorological Department of Norway), which have shown how completely dependent the temperature of the coast-line is upon the sea which laves it. For while the temperature of the air is generally much below the freezing-point during the winter months, that of the water is always considerably above it ; the average excess at Fruholm, near the North Cape, being as much as 14.5° Fahr. And it has been further shown by professor Möhn, that not only the coast temperature of Norway during the winter, but its inland climate, is affected in a very marked manner by this afflux of warm water ; for the "isothermals," or lines of mean winter temperature, instead of corresponding with the parallels of latitude, lie parallel to the coast-line.

How, then, are these phenomena to be explained? If the *vis a tergo* of the Gulf Stream has spent itself in the mid-Atlantic, what force brings this afflux of warm water to our shores, and carries it on to the N. E., along the coast of Norway, and even past the North Cape towards Spitzbergen and Nova Zembla? And how does it happen that the water which laves our north-western shores in winter, is not only so much warmer than the air which rests upon it, but continues to preserve a notable portion of that warmth at least as far as the North Cape, notwithstanding that as it flows northwards its temperature is more and more in excess of that of the atmosphere above it?

It is obvious that the continual outflow of the deeper stratum of polar water, of which we have evidence in the constant maintenance of the glacial temperature, not only at the sea bottom, but of the great mass of the water contained in the vast oceanic basin, cannot be maintained without a continual indraught of the upper stratum towards the poles; this, as its temperature is progressively lowered, decreases in volume and increases in specific gravity; and as the lower stratum flows away under the excess of pressure, the upper stratum, now cooled down nearly to the freezing-point of salt water, will sink into its place, making way for a new indraught above. The two polar underflows, on the other hand, meeting at or near the equator, will there tend to rise towards the surface, replacing the water which has been draughted away towards either pole; and thus a constant "vertical circulation" must be kept up by opposition of temperature alone, analogous to that which takes place in the pipes of the hot-water apparatus by which large buildings are now commonly warmed. The only essential difference between the two cases is, that whilst the *primum mobile* in the latter is the heat applied to the bottom of the boiler, making the warmed water ascend by the reduction of its specific gravity due to its expansion, the moving power in the former is the cold applied to the surface of the polar water, making it descend by the increase of specific gravity due to the diminution in its bulk as its temperature is lowered. * * *

My explanation, though contested by Mr. Croll, and not accepted by Sir Wyville Thomson, has been explicitly adopted by a large number of eminent physicists, both British and Continental, among whom I may specially mention professor Möhn of Christiania, who had previously maintained the dependence of the remarkable climatic condition of Norway on the N. E. extension of the true Gulf Stream. Immediately on receiving the report in which I had demonstrated the inadequacy of the Florida Current to propel as far as the coast of Norway the vast body of warm water required to keep its harbors open, and had shown the dependence of the N. E. movement of the warm upper stratum, to the depth of five hundred fathoms (which I had myself first recognized in the "Porcupine"), on the poleward indraught that forms the necessary complement of the outward glacial underflow, professor Möhn not only expressed to me his entire concurrence in both views, but communicated to me a remarkable example he had himself met with, of a similar vertical circulation on a smaller scale. It is to the remarkable thickness of this poleward flow that the surface layer owes its power of so long resisting the cooling effect of the atmosphere which overlies it; so that, as it flows along the coast of Norway

towards the North Cape, its temperature even in winter sustains so much smaller a reduction than that of the atmosphere, as to give it an excess which constantly increases with its northing. But though its surface temperature is so little reduced, the thickness of this warm stratum is undergoing progressive diminution, as its deeper layers successively go up to replace those which have been chilled and have gone down; so that beyond the North Cape, the surface temperature rapidly falls with the eastward movement of this flow along the northern shores of Europe and Asia; and all trace of heat imported from the south-west at last dies out.

As the superheating of the upper stratum of the mid-Atlantic is dependent on the influx of Gulf Stream and other water exceptionally warmed in the Equatorial Current, the *thermal effect* of its N.E. flow is mainly dependent upon the Gulf Stream and its adjuncts, while its *movement* is kept up by the polar indraught. Thus neither the general oceanic circulation, nor the Gulf Stream, could alone produce the result which is due to their conjoint action. The Gulf Stream water, without the polar indraught, would remain in the mid-Atlantic; and the polar indraught, without Gulf Stream water to feed it, would be almost as destitute of thermal power as it is in the South Atlantic.

SCHOOL WORK AT INSTITUTES.

BY S. S. BOYNTON.

THIS heading hardly expresses our meaning, but comes as near it as any four words can.

Our idea is this, there is much work done by the pupils in our schools that ought to be shown at Teachers' Institutes.

It would look odd to see a convention of painters discussing the merits of painting while all specimens of their work had been left at home. In every school a large percentage of the pupils study penmanship. Specimens from every school might with profit to most teachers be exhibited at Institutes.

At the beginning of a term let each pupil write a sentence or two as well as he can as a specimen of his penmanship. Just before the Institute meets, let each again write a specimen. From all the specimens select the three making the greatest improvement, and take these with you.

At the Institute have a committee appointed to paste these specimens in a common scrap-book with the leaves cut out, so as to leave merely stubbs to paste to.

During the first day specimens from all the schools can be placed in the book side by side for comparison.

It would be a good plan then for the Institute to call upon those teachers whose work stood best to illustrate their method of teaching penmanship.

An idea we have several times tried is to have each pupil in the school write monthly specimens, and place these in a scrap-book for constant reference. Where such specimen books are prepared, it would be but little trouble to carry them to the Institute with you.

This same general idea could be carried out by teachers in preparing specimen maps, drawings, and letters, as well as bills, notes, and other business forms.

These could be pasted together at one edge, and need not be put into books. The effect of this work is excellent upon the school, and serves to excite a spirit of emulation among the pupils. It can be done at a slight cost to the district, and will in the end prove a lasting benefit.

We see no reason why work of this kind could not be done in spelling, grammar, and some of the other studies.

This work left open for inspection in a room adjoining the Institute Hall will at all times be found attractive to the earnest teacher, and though it may cost some time and trouble, will repay them in a ten-fold manner.

We hope our fellow-teachers will try this suggestion. One fair trial of a plan is worth a hundred theories. Try as little or much of it as you please, but give it a fair trial, and my word for it, you won't regret having done so.

EDUCATIONAL GLEANINGS.

[From the Scrap-Book of a Teacher.]

THE HIGHER EDUCATION.

“The very corner-stone of an education intended to form great minds must be the recognition of the principle, that the object is to call forth the greatest quantity of intellectual power, and to inspire the intensest love of truth, and this without a particle of regard to the results to which the exercise of that power may lead, even though it should conduct the pupil to results diametrically opposite to those of his teachers.”—*John Stuart Mill*.

“Such are the principles of all academical instruction which aims at forming great minds. The details can not be too various and comprehensive. Ancient literature would fill a large place in such a course of instruction, because it brings before us the thoughts and actions of many great minds—minds of various orders of greatness, and those related and exhibited in a manner ten-fold more impressive, more calculated to call forth high aspirations, than in any modern literature. Imperfectly as these impressions are made by the current modes of classical teaching, it is incalculable what we owe to this, the sole ennobling feature in the slavish mechanical thing which the moderns call education.”—*John Stuart Mill*.

“I call a complete and generous education that which fits a man to per-

form justly, skillfully, and magnanimously, all the offices, both public and private, of peace or war.”—*John Milton.*

“Neither our humanists nor our realists adequately conceive the circle of knowledge. The humanists are loth to believe that man has any access to vital knowledge except by knowing himself,—the poetry, philosophy, history, which the spirit has created; the realists, that he has any access except by knowing the world, the physical sciences, the phenomena and laws of nature. It seems to me that so long as the realists persist in cutting in two our circle of knowledge, so long do they leave for practical purposes the better portion to their rivals, and in the government of human affairs their rivals will beat them”—*Matthew Arnold.*

“What the universities have mainly done—what I have found the universities did for me, was that *they taught me to read* in various languages and various sciences, so that I could go to the books that treated of these things, and try anything I wanted to make myself master of gradually, as I found it suit me.—*Carlyle.*

EDITORIAL DEPARTMENT.

TO THE TEACHERS OF CALIFORNIA.

THE teachers of California are familiar with the history of the JOURNAL. It is nearly four years since the first number was issued.

The old *California Teacher* had lately been discontinued. After it passed out of the really able and successful control of its founder, Mr. Swett, neither ability nor honesty could be discerned in its management. Relying solely on State aid, its conductors sought to retain the greater part of that aid by returning the least possible equivalent therefor. Its monthly parts were made up of reprints from Eastern educational journals, or translations from German botanical works. It was evident that its management had no well-defined idea of what an educational periodical should be; or the community at large no respect for what such a publication could do. Teachers read it because it was furnished free; and it was no uncommon remark that it was not worth its subscription price.

When the State aid was withdrawn, it died, without making an effort to live. It had been so utterly useless either as an index of educational progress in California, or as a practical aid to the inexperienced teacher, or to lift the masses to a better comprehension of education as a science, that no one missed it or mourned. It failed in its chosen field, and injured that field for its successor.

It was under such discouraging auspices that the PACIFIC SCHOOL AND HOME JOURNAL appeared. Of its early struggle for existence we need say but little. It proved itself worthy to live, so the best teachers of the State rallied to its support. It was a hard fight, for the State is large and population small. Its inception and early years were at a critical period in the history of the State. There was a great

financial depression amounting to a monetary panic. A radical revolution in the whole government of the State occurred, bringing with it a complete overturning of our school system. Amid these scenes and changes, the JOURNAL lived and thrived. Our teachers knew on which side it could always be found. It labored assiduously in the interest of teachers and of education. It advocated everything for the benefit of the schools—fought all that threatened their injury. It devoted itself, with no selfish end in view, to raise the standard of teaching and to increase the salaries of teachers. It sustained the timid and doubting in our profession, urged on the laggard, reproved the indifferent and apathetic. Of course, in striving to accomplish so herculean a task, it must have made enemies. But it is to us a subject of deep and constant gratification that, on every hand, the representative educators of the coast, the superintendents and most conscientious and devoted teachers, have been and are warm supporters of the JOURNAL, and thoroughly interested in its welfare.

These remarks are preliminary to a statement in explanation of the action of the State Board of Education postponing any present designation of an official organ for the Department of Public Instruction. The passage of the law, last winter, empowering the State Board to make such designation, and the indefinite postponement of any action, have brought on a crisis in the history of the JOURNAL to which we call the earnest attention of all who are interested in the development of our educational system. At the time the law was passed, and until a few weeks before the Board met, there was but one educational periodical in the State, and that was this JOURNAL. When the Board met, two other claimants appeared *for the State appropriation*. One, published by J. Addison Reaves of Sacramento, was presented by that gentleman in a manly, honorable fashion, with ability and courtesy. He had started it with the hope of getting State aid, but in the meanwhile, went to work in an intelligent, honest, business-like way, sent specimen copies of his paper to every school district in the State, and endeavored to show some tangible evidence of having established a legitimate, *bona fide* business enterprise.

The second publication was, however, entirely different in character. If any copies, other than those sent to members of the State Board, were ever printed, they were not sent to the teachers and superintendents of the coast. One number, composed of forty pages greatly resembling the old *California Teacher* in that it consisted almost entirely of extracts from other journals and school reports, was hastily made up and presented. Its proprietor is a French gentleman who by reason of success in publishing a French weekly, ventured a bold stroke in the educational field. Rather than be unkind, we shall say nothing concerning the managing editors—at *present*. Of the contributing editors, one has already peremptorily withdrawn the use of his name.

It is hardly necessary to say that there were no claims to present, no showing to make, except by the JOURNAL. So the Board must have thought when it unanimously passed Prof. Allen's preamble and resolutions. But, the question arises, why after this preamble which in effect fully concedes the whole matter and endorses the work this JOURNAL has done, was the JOURNAL not authoritatively designated as the organ of the Department?

The answer is, the Board believed it wiser to postpone, because the JOURNAL has shown its ability to live with no State aid; this other concern as a speculation, must die without. If a designation is made now, some members of the Board fear a legislative fight, which would result in a repeal of the law, and the consequent loss of a valuable adjunct of the State office.

This is the condition in which the matter now stands. At date of writing, June 28, though six weeks have elapsed, no second number of this very peculiar business undertaking has made its appearance. We expect, however, to see it again and again, until the State Treasury is closed against it, when it will disappear. We have no desire to advertise either the paper or its management *now*. The true inwardness of the whole affair, has not even yet been touched on; we defer fuller explanations to the future.

We have a few earnest words to say, in conclusion, to the teachers of California. This JOURNAL has stood by you: we hope in return now, to have your active and hearty support. We trust every reader will, at once, secure us two or three more. *The district library subscriptions we are already authorized to receive;* every active friend will see, that we have them. The State superintendent publishes his decisions, exclusively, in our pages, so the more extended our circulation, the more complete will be the bond between the State office and every schoolroom in the commonwealth. We do not think the JOURNAL has ever been dull or uninviting; but we hope to have there also a genuine revival. What we ask is general, hearty support from every one interested in keeping politics out of our schools, in favor of a journal to represent teachers, and determined that neither chicanery nor treachery shall succeed against honesty and unselfish effort.

So to those friends who have so often stood by us before, we say, aid us again. Help us first with new blood; then give us the results of your experience in school and out; in a word, secure for us the support of all interested in education, and aid us to make the JOURNAL altogether worthy of universal patronage.

For our part, we hope the work of nearly four years past, will be taken as a pledge of what may be expected in the future.

THE NEW CHARTER FOR SAN FRANCISCO.

THE people of San Francisco will soon be called on to vote for or against the adoption of a new charter. We have examined, thus far, but one article in the document, and that, of course, is the article on education. In it, there are many good features, but there is one section on account of which alone, it will fail to meet with the support of this JOURNAL, and we believe of the whole teaching force of San Francisco. We refer to the clause restricting the amount to be raised for salaries to \$22 for each child in actual attendance on the schools. The result of this clause, if adopted, would be to reduce, still further, the salaries of our teachers. As the list now stands, our primary and grammar school teachers are scarcely half paid. This clause would necessitate still further reductions.

Only very obstinate or very ignorant men can believe that good schools are possible without good teachers; and that good teachers can be retained at present salaries, or at such rates of compensation as this charter makes inevitable, will be urged by three classes—those who are noted for stupidity—those who are indifferent—or those who desire to build up a competing system of private or sectarian instruction in place of an efficient and far-reaching scheme of popular education.

THE STATE PRINTING.

THE amount of work required of the State printer, at this session of the legislature and until the present time, is something unprecedented. This is easy to understand, as the complete revolution in the government of the State has made a radical change in all our laws.

Great credit is therefore due to Capt. J. N. Young, the superintendent of the State printing office and to Mr. Foster the binder, for the promptitude with which the educational blanks etc. have been issued. Supt. Campbell has been complimented, and at the same time envied, for the advanced condition to which his energy and foresight have brought the educational printing. The State Law, complete, will soon be out, and this will relieve the immediate pressure on this department, and answer the question we ourselves heard the head of one of the State departments ask the State superintendent. "When are you going to get through with the printer and binder, and give the rest of us a chance?"

UNPAID SUBSCRIPTIONS.

WE hope all subscribers owing the JOURNAL for the current year will promptly remit. There are, also, quite a number still delinquent for the past year. From these, certainly, we may expect an immediate settlement. We dislike to burden our editorial pages with anything in the nature of a dun, and hope it will be long before we are compelled again to give this reminder.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

STATE BOARD OF EDUCATION.

THE State Board of Education met in the office of the Superintendent of Public Instruction at 10 A. M. on Saturday, June 12th. Present—Gov. Geo. C. Perkins, State Superintendent Campbell, and Prof. Charles H. Allen, principal of the Normal School.

The Board organized by the election of Gov. Perkins as president, and F. M. Campbell as secretary.

Upon motion of superintendent Campbell the applications for life diplomas were taken up, and life diplomas were unanimously ordered to be issued to the following :

Warren B. Ambrose, San Joaquin county ; Miss May Cooper, Santa Cruz county ; O. S. Frambes and Mrs. S. E. Frambes, Los Angeles county ; Amos M. Ayers, Yolo county ; J. W. Stringfield, San Luis Obispo county ; L. G. Rhodes, Yolo county ; Henry Lieginger, Calaveras county ; Miss Ella Chandler, Santa Clara county ; Albert Warren Sutphen and Emerson Wood, Solano county ; Mrs. C. F. Floyd, Calaveras county.

Educational diplomas were ordered to be issued to Miss Ada Locke, San Joaquin county ; Miss Maggie Younger, Sacramento ; A. B. McPherson, Kern county ; A. O. Damon, Placer county ; Manuela G. Salcido, Calaveras county ; Philip Achey, Napa county ; G. W. Simpson and S. J. Pullen, Placer county.

Some applications for diplomas being informal, the secretary was requested to notify the parties concerned to make the proper corrections, the Board meanwhile deferring action until their next meeting.

The rules and regulations of the old State Board of Education, so far as applicable under the present school law, were adopted.

A communication was read from Supt. S. M. Augustine, of Marin county, charging a teacher in that county with having obtained her certificate by fraud, and asking its revocation.

On motion, it was ordered that the secretary notify the lady to appear at the next meeting and show cause why her certificate should not be revoked.

The seal of the former State Board was, on motion, adopted as the seal for the present Board.

After discussion, and on motion, the secretary was instructed to make such changes in the form of life and educational diplomas as to make them conform to the new Constitution and the new school law.

Several communications were submitted by the secretary as to the construction of subdivisions 10 and 11 of Section 1521 of the Political Code, and after discussion professor Allen offered the following, which was adopted :

Resolved, That educational and life diplomas will be issued as provided in said Subdivisions 10 and 11 of Section 1521 of the Political Code, notwithstanding the first grade certificate may have expired previous to the application, provided all other conditions specified in said subdivisions are complied with.

A communication from F. B. Ginn in regard to the library books was received and referred to a special committee, consisting of Messrs. Campbell and Allen, to whom also was referred, first: the whole matter of rules and regulations for the government of the public schools and district school libraries ; second: rules to be recommended for the examination of teachers ; third: course of study in the public schools, and fourth: a list of books to be recommended for district school libraries.

The matter of designating some monthly educational journal as the official organ of the Department of Public Instruction then came up. Three propositions were received—one from James Addison Reaves, submitting the claims of the *Official Gazette and School Organ*, one from George Francfort in behalf of the *California School Record*, and one from Albert Lyser, for the PACIFIC SCHOOL AND HOME JOURNAL.

On motion, each of the above named gentlemen was invited to address

the Board on the merits of his publication. The Board then listened to remarks at considerable length by these gentlemen. The subject having been fully considered afterwards by the Board, the following resolution introduced by Prof. Allen was adopted :

WHEREAS, The PACIFIC SCHOOL AND HOME JOURNAL is already furnished by subscription to a considerable number of school districts of the State, and is largely in circulation among teachers ; and whereas, said journal is already in reality the acting organ of the State Board of Education ; therefore,

Resolved, That we deem it best, at the present time, not to designate and subscribe for a journal as provided for in Section 1521 Subdivision 12, of the Political Code.

Various matters pertaining to the organization and conduct of the public school department under the new order of things, were fully discussed. In view of the fact that the power of the State Board is merely recommendatory in regard to the subjects referred to the special committee, it was suggested that correspondence should be invited from the local Boards of Education and superintendents, upon the subject of rules for the examination of teachers, course of study, and list of library books.

The Board then adjourned to meet at the call of the secretary.

After adjournment the special committee held a meeting and discussed the subjects referred to it. A division of labor was agreed upon, and another meeting will soon be held in San Jose.

THE STATE COURSE OF STUDY.

THE matter of the course of study to be recommended for adoption, was referred at the last meeting of the State Board to a special committee consisting of superintendent Campbell and professor Allen. As the power of the State Board is at most only recommendatory, by reason of the want of uniformity in other matters, it has been decided by this committee that no course of study can be, at present, prepared with any prospect of a general adoption by the County Boards. It has, therefore, been deemed best that each Board prepare its own course suited to the wants of its own jurisdiction. It is hoped that from these, perhaps at the State Convention of County Superintendents provided for by law, that a uniform course can be evolved, with the prospect of a general adoption. It is therefore hoped that this subject will receive the earnest consideration and action of each County Board.

A CIRCULAR has been sent out from the State Office to the secretary of each County Board of Education, requiring a list of the recently adopted textbooks to be sent in to be placed on file.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

PRECOCITY A SIGN OF INFERIORITY.—M. G. Delauney, in a communication to the French Societe de Biologie, has advanced the opinion that precocity is a sign of biological inferiority. In support of his position he adduces the fact that the lower species develop more rapidly, and are at the same time more precocious than those higher in the scale. Man is the longest of all in arriving at maturity; and the inferior races of men are more precocious than the superior, as is seen in the children of the Esquimaux, negroes, Cochinchinese, Japanese, Arabs, etc., who are, up to a certain age, more vigorous and more intellectual than small Europeans. Precociousness becomes less and less in proportion to the advance made by any race in civilization—a fact which is illustrated by the lowering of the standard for recruits, which has been made necessary in France twice during the present century, by the decreasing rapidity of growth of the country. Women are more precocious than men, and in all domestic animals, the female is formed sooner than the male. From eight to twelve years of age, a girl gains one pound a year on a boy, and in mixed schools girls obtain the first places up to the age of twelve. The inferior tissues and organs develop before the higher ones, and the brain is the slowest of all organs to develop. M. Delauney concludes his paper by stating that the precocity of organs and organisms is in an inverse ratio to the extent of their evolution.—*Popular Science Monthly*.

A SIMPLE way to produce an illuminating composition is thus described in *Industry*: Clense oyster shells by well washing, expose them to a red heat for half an hour, separate the cleansed parts, and put into a crucible in alternate layers in sulphur; now expose the vessel to a red heat for an hour at least. When cold break the mass, and separate the whitest parts for use. If enclosed in a bottle the figures of a watch may be distinguished by its aid. To renew the luminosity of the mass place the bottle each day in the sun, or in strong daylight; or burn a strip of magnesium wire close to the bottle. The sulphide of lime will thus absorb light, which will be available at night time.

THE continuous to and fro movement of the bubble of an accurately adjusted spirit-level is said to be due to a continual rising and falling of the earth's crust.

A SINGLE week of raw and densely foggy weather more than doubled the death rate of London, compared with the average for the corresponding week for the preceding years.

A PROFESSOR at the observatory of Gottingen, has invented a telegraphic device by which eight different messages may be sent by one wire at the same time and printed separately and simultaneously by means of an apparatus at the receiving end.

AN English scientific journal says it is thought that a crisis in the history of Mt. Vesuvius is approaching; either there will be a great discharge, such as will terrify the neighborhood, or, as is more likely, there will be an overflowing of lava, covering the cone with a mantle of fire, and silently inflicting more destruction on property than a grand eruption. Vesuvius has been in an active state now for several years, and professor Palmieri has from the first prophesied that the eruption would consist in the overflowing of lava.—*Barnes' Monthly*.

ICEBERGS have often been seen in Davis' Straits nearly two miles in length and one-third as wide. Their summit and spires rise to the height of one hundred feet or more. Their bases probably reach four or five times this distance beneath the sea. Others possess an even surface five or six square miles in area, elevated nearly one hundred feet above

the sea, and aground in ninety to one hundred fathoms of water. The weight of such an iceberg is estimated to be upwards of two thousand million tons.—*Practical Teacher.*

THE late professor Faraday adopted the theory that the natural life of man is 100 years. The duration of life he believed to be measured by the time of growth. In the camel the union takes place at eight, in the horse at five, in the lion at four, in the dog at two, in the rabbit at one. The natural termination is five moves from these several points.

Man being twenty years in growing lives five times twenty years—that is, 100; the camel is eight years in growing, and lives forty years; and so with other animals. The man who does not die of sickness lives everywhere from 80 to 100 years. The professor divides life into equal halves—growth and decline—and these into infancy, youth, virility, and age. Infancy extends to the twentieth year, youth to the fiftieth, because it is in this period the tissues become firm, virility from fifty to seventy-five, during which the organism remains complete, and at seventy-five old age commences to last a longer or shorter time as the diminution of reserved forces is hastened or retarded.—*Exchange.*

THE Japanese make a very curious and handsome kind of copper by casting it under water, the metal being highly heated and the water also being hot. The result is a beautiful rose-colored tint, which is not affected by exposure to the atmosphere.—*Barnes' Monthly.*

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

47	58	69	80	1	12	23	34	45
57	68	79	9	11	22	33	44	46
67	78	8	10	21	32	43	54	56
77	7	18	20	31	42	53	55	66
6	17	19	30	41	52	63	65	76
16	27	29	40	51	62	64	75	5
26	28	39	50	61	72	4	4	15
36	38	49	60	71	73	3	14	25
37	48	59	70	81	2	13	24	35

In relation to the Magic Square Puzzle, which consists in arranging in a square the natural numbers contained in the square of any odd number, so that the sums of the columns shall be the same whether added horizontally, perpendicularly, or obliquely, we would present the following diagram as a substitute for the first diagram of the May number, which was erroneous in several places.

Mr. P. B. Hulse (with Clark & Maynard), 127 Montgomery street, contributes this solution and rule; and also the succeeding problem.

All the columns—horizontally, diagonally, and vertically=369.

Rule.—Commence with figure *one* in the middle block in the upper line, and proceed diagonally to the right one block above. In case there is no block there to be filled, go to the opposite side of the square with the next figure; and thus proceed from 1 to 25 inclusive. In case the block to the right above

is already filled, place the next figure in order in the block immediately below the last one filled, and then proceed according to the general rule.

This rule applies only to the square of odd numbers—by a different rule the even numbers can also be arranged.

PROBLEM 31.—In a room 20 ft. square and 15 ft. high, a wingless fly is required to walk from one of the upper corners of the room to the diagonally opposite lower corner. What is the length of its shortest route?

MR. GEO. R. BISSELL of Alameda sends the following interesting propositions:—

All perfect squares (integers) are the sums of the consecutive *odd* numbers from, and including unity, upwards. For example :

$$1^2 = 1 = 1$$

$$2^2 = 4 = 1 + 3$$

$$3^2 = 9 = 1 + 3 + 5$$

$$4^2 = 16 = 1 + 3 + 5 + 7$$

$$5^2 = 25 = 1 + 3 + 5 + 7 + 9$$

$6^2 = 36 = 1 + 3 + 5 + 7 + 9 + 11$, and so on, up to the square of any whole number.

The same result is arrived at in another manner. In an arithmetical progression, the sum of the terms is equal to one-half the sum of the extremes, multiplied by the number of the terms. Now in the above progressions (and the same extended to any number of terms), one half the sum of the extremes is always equal to the number of the terms. Thus, in the last one given $(1 + 11) \div 2 = 6$ and this multiplied by 6 the number of terms $= 6 \times 6 = 36 = 6^2$.

It is proved in Algebra that "the difference between the squares of any two consecutive numbers is equal to the sum of those numbers." For example, $5^2 - 4^2 = 25 - 16 = 9$. Looking above we find 9 to be the odd number which is the last term that goes to make up the square of 5. Also $5 + 4 = 9$, the sum of the two numbers.

NEWS RECORD.

OUR record closes on June 24th.

Foreign and Domestic.

The Empress of Russia died in June.

A famine is making terrible ravages in Kurdistan, Armenia, and Western Persia. There is also considerable suffering in Ireland, though but few authenticated cases of starvation.

The candidates for the presidency are now fairly before the people. The republicans nominate James A. Garfield of Ohio for president, and Chester H. Arthur of New York for vice-president. The democrats name Winfield S. Hancock of Pennsylvania for president, and W. H. English of Indiana for vice-president. There is a third party in the field, the National Greenback party,

whose standard-bearers are James B. Weaver of Iowa for president, and B. J. Chambers of Texas for vice-president.

12,511 emigrants the first five days of this month arrived in New York.

On the night of June 9th a terrible collision occurred in Long Island Sound, between the steamers "Stonington" and "Narragansett." The latter was injured and set on fire. Of her 300 passengers, between fifty and sixty were lost.

John Brougham, the actor, died in June.

Buenos Ayres is in a state of siege and is believed to be surrounded by armed emissaries from other provinces.

It is reported that the Chilians have captured Arica, Peru.

The Superior Court of California has, on a writ of *habeas corpus*, released Denis Kearney from the imprisonment to which he was consigned by the Police Court of San Francisco, reversing the judgment of the Superior Court of that city, which sustained the sentence. The discharge of Kearney is equivalent to a declaration that his imprisonment was illegal.

Educational.

The Princeton examinations were represented this year in San Francisco, by a class of three. The examinations were conducted by Prof. ———, at Mr. Carl Isenschimmel's Writing Academy on Kearny street. One of the matriculates was prepared by ex-superintendent Mann of this city.

Troy has shown its good sense by increasing its teachers' salaries.

By the adoption of the German-English plan in the St. Louis schools there are now thirty fewer special German teachers than there were at this time last year. The same plan has been in operation in the San Francisco schools for over a year, and has proved eminently successful.

Principal E. O. Vaile of Chicago, has been dismissed for inflicting corporal punishment in his school. This action testifies abundantly to the stupidity of the Chicago Board of Education, for Prof. Vaile is one of the foremost educators in the Union, and withal has an international reputation as an able writer on educational subjects.

From Iowa comes the news of an advance in teachers' salaries.

R. W. Stevenson has been re-elected for two years superintendent of the public schools of Columbus, at former salary, \$3,000. Mr. Stevenson has already served about nine years.

Andrew J. Rickoff was on May 17, re-elected for two years superintendent of the public schools of Cleveland, at the same salary, \$3300. This is his seventh re-election; Mr. Rickoff stands in the front rank of American educators.

Dr. Edward Brooks, principal of the Normal School at Millersville, Pa., makes this year a trip to Europe. He is one of the 40,000 Americans that the *New York Herald* estimates will visit Europe in 1880. Dr. Brooks is the author of some fine mathematical works including "The Philosophy of Arithmetic."

The International Educational Congress will convene at Brussels, Belgium, in September, 1880. M. Couvreur will be president, and M. Buis, secretary. There will be six sections, which may be subdivided by the committee on organization, if necessary or desirable. The object of the Congress will be to familiarize the educational public with "the social and pedagogical questions" which are involved in all degrees of teaching. Each speaker will speak in his own language. Twenty or more questions are to be discussed in each degree or grade of teaching, Twenty-five were selected for primary instruction, embracing nearly all leading subjects under that head. In academic instruction, the battle ground will be between classical and scientific studies; each would confine the other to narrower limits. The distribution of historical studies and the natural sciences, is another of the twenty questions in this department. The liberty of the professor with regard to doctrines contradicting the religious ideas of the people in general, is to be discussed in the department of higher education. Here is another: "How can official programmes most suitably fix the order of studies?" An international exhibition of school furniture and apparatus will also be connected with the Congress.—*Central Journal*.

"Daniel S. Dickinson, Sanford E. Church, and Henry J. Raymond once passed over this stone as teachers of this school" is the inscription on one of the steps of a school-house at Wheatland, Monroe county, New York.

The Thirty-eighth Annual Report of the Board of Education of the City and County of New York for the official year ending Dec. 31st, 1879, shows that the average attendance at the public schools in the twenty-four wards was 107,769, the register number 120,607, and the accommodation 141,714. The city system embraces a Normal College and Training Department, a Saturday Normal School for Teachers, Grammar Schools for Males, and the same for Females, Grammar Schools for both sexes, Primary Department of Grammar Schools, separate

Primary Schools, Corporate Schools (Industrial Schools, Reformatories, Orphan Asylums, etc.), Evening Schools, and Nautical School on board the ship "St. Mary." The Annual report of the Trustees of the College of the City of New York shows, besides the president, fourteen professors, twenty-four tutors, and one special instructor in elocution. The number of students in the four collegiate classes was 496; in the introductory class 797.—*Exchange*.

A gentleman of New York—Mr. R. T. Auchmuty—has offered the Trustees of the Metropolitan Museum the use of a piece of ground in First avenue, near Sixty-seventh street, for three years, free of rent. Moreover, he proposes to erect at his own expense a suitable building for an Industrial Art School, and to support the school for three years, allowing it to be under the supervision of the trustees. This he does to prove the advantages of such a school. It is expected that this new building will be ready for use in the fall. There will be classes in drawing and designing as applied to wood-work and iron, and a painting department, in which will be taught the principles of mixing colors, their chemical composition, the effect of light and temperature upon them, etc.

Personal.

Mr. Strahan, the well-known London publisher, has sailed for the United States, and one of the objects of his journey is, it is said, to ascertain whether American publishers are not willing to agree to some better compromise than any of the many which have been suggested in America relative to international copyright.

Professor Proctor delivered some one hundred and thirty-six lectures from the time he arrived in the United States, last October, to the date of his sailing from San Francisco to Australia, on the 12th of May.

Queen Victoria was sixty-one years of age on the twenty-third of May.

Mr. Tennyson has consented to be nominated Lord Rector of Glasgow University.

During the past six years alone M. Alexandre Dumas has received from the Theatre Francaise \$48,000 for author's fees, and Victor Hugo from the same source the sum of \$40,000.

According to the phraseology of the London guilds—for which bloated and mysterious corporations Sir Charles Dilke has a rod in pickle—the Prince of Wales is a haberdasher, and the Dukes of Edinburgh and Connaught are fish-mongers; the Duke of Cambridge is a mercer and a merchant

tailor; Lord Beaconsfield is also a merchant tailor, and the Lord Chancellor and the Chief Justice are mercers.

The governor of Massachusetts has appointed Mrs. Clara Leonard of Springfield, on the State Board of Health, Lunacy, and Charity—the first woman ever appointed on the Board.

Nobody can complain that art does not pay. Capoul carries away as his winter's earnings \$50,000, Campanini as much more, Miss Neilson an amount in the same neighborhood; John McCullough clears nearly \$60,000, and Mary Anderson \$75,000.

When the announcement of the Liberal victory in England was made to Prince Gortchakoff, he was sitting up in his sick-bed hardly able to dip his biscuit in the claret he was sipping. His face lighted up, he laughed outright, instantly dictated a letter to the Czar, and took a new lease of life.

Mrs. Frances Hodgson Burnett has been at Niagara, on English soil, in order to secure the benefit of an English copyright for her new novel, *Louisiana*.

E. O. Haven of Syracuse University, is one of the newly-elected bishops of the M. E. Church. Bishop Haven is expected soon to arrive in California.

The oldest living graduate of Harvard College is said to be Mr. Joseph Head, of New York, who graduated in 1804. To show how primitive was the educational system of the country at that time, it is only necessary to state that Mr. Head is wholly ignorant of base-ball, and has but a superficial knowledge of boat-racing.—*Central Journal*.

Kossuth resides at his villa in Collegno, near Turin, where he has lived for nearly ten years. He is now seventy-eight years old, but does not look more than sixty, and occupies his time in the study of astronomy and botany.

Professor Huxley, on opening his mail the other morning, received the pleasant communication of a thousand-pound note. If there were more people of such discriminating generosity as the professor's unknown correspondent, there would be fewer cases of prematurely worn-out brains from worry and work.

Mr. Joseph Hutton and Mr. Charles Dickens, Jr., have obtained suggestions of the author's intended dénouement to *Edwin Drood* from Mr. Luke Fields, the illustrator of "Lord Brackenbury" in the *Bazar*, to whom Dickens confided it, and on that foundation have effectively dramatized the story.

Wagner, the composer, even in infancy is said to have recognized tunes, and to have played on several instruments by ear before he was eight years old. From that time he resolved to be a musician, and there was no disposition on the part of his parents or any of his kinsmen to change his resolution.

Carlyle, the historian, is said to be failing rapidly. He cannot now hold a cup without spilling its contents.

Joaquin Miller is reported as saying that San Francisco has all the vanities and vices of the East, without its virtues.

George C. Perkins the governor of California, is a frank-looking and genial gentleman, apparently not yet forty years of age, though he has nearly reached his fiftieth birthday. Governor Perkins is preeminently a self-made man, but with none of the oddities of manner which so generally characterize that class of citizens. He is well-read and intelligent, full of *bonhomie*, but with that dignity of manner which, while it creates respect and confidence in the worthy, keeps the intrusive and presumptuous at a distance. Governor Perkins is just on the threshold of political life and political honors. He is a good example of the best class of American public men.

General Notes.

It is not a matter of national pride that, in the competition for an equestrian monument to George Washington, to be erected in Philadelphia, the prize was carried off not by an American, but by a German, Prof. Siemering, of Berlin, who has now received the commission to execute the work.

Mr. Trowbridge, our consul at Vera Cruz, has called attention to a cactus known as the "pita," with fibers sixteen feet long, and capable of being spun to an incredible fineness. The fabric woven from these fibers appears like silver tissues of wonderful delicacy. The plant flourishes both in Mexico and Texas in great abundance.

The following is a game that may profitably be used by our teachers, when something not on the regular program is wanted for a change. We find it in the *Boston Traveller*:

Given two words of an equal number of letters, the problem is to change one to the other by altering one letter at a time, of the first so as to make a legitimate English word continuing the alterations until the desired result is attained. The conditions are that only one letter shall be altered to form each new word, and that none but words which can be found in English dictionaries shall be used. Here are some examples of the changes:

East to West—East, vast, vest, West.

Boot to Shoe—Boot, soot, shot, Shoe.

Dog to Cat—Dog, dig, fig, fit, fat, Cat.

Milk to Hash—Milk, mile, male, mate, hate, hath, Hash.

Road to Rail—Road, rood, root, coot, coat, coal, coil, toil, tail, Rail.

Soup to Fish—Soup, soul, soil, foil, fowl, fool, foot, coot, cost, cast, fast, fist, Fish.

The Vesuvius Railway is now complete, and tourists are able to visit the famous crater without the trouble and fatigue of climbing. There are two passenger cars, the "Vesuvius" and the "Etna," each capable of accommodating twelve persons. The depot is situated at a height of 810 meters, or 212 meters above the observatory, and there is a commodious restaurant attached to the depot.

The first railroad opened in Japan was that from Yokohama to Tokio, completed in 1875. Since then this railroad has been extended to several other places, and another road, from Tokio to Myabasi, will soon be opened. Telegraph lines follow the course of the railroads, and cables connect the several islands of which the empire is composed. There is now in process of construction a cable to the island of Loo-Choo, an island whose ownership is a matter of dispute between China and Japan.

"A simple creed, one God and Father, brought nearest to us by the man Christ Jesus," is what Oliver Wendell Holmes laid down at the Unitarian festival in Boston, last Thursday.

SPELLING REFORM.—The first work in this great reform is to drop silent letters. Any one can take this step in his private correspondence and his articles for the press. As a guide to such changes the American Filological Association have recommended the following eleven words. THO, THRU, GARD, CATALOG, AR, GIV, LIV, HAV, DEFINIT, INFINIT, WISHT. And the Spelling Reform Association have recommended what ar known as the "Five Rules:"

1. Omit *a* from the digraf *ea* when pronounst as *e*-short, as in hed, helth, etc.
2. Omit silent *e* after a short vowel, ar in hav, giv, etc.
3. Write *f* for *ph* in such words as alfabet, fantom, etc.
4. When a word ends with a doubl letter, omit the last, as in shal, clif, eg, etc.
5. Change *ed* final to *t* where it has the sound of *t*, lasht, imprest, etc.—O. C. BLACKMER, in *Practical Teacher*.

One of the largest lumps of solid gold ever seen in this city was on exhibition at the Pacific Refinery a few days since. It was about fourteen inches long by seven in width and six in height. Its value was estimated at \$55,000.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

ALAMEDA COUNTY.

The Commencement exercises of the State University took place June 3d in Harmon Hall, at Berkeley. Shortly after 11 o'clock A. M. a procession was formed and entered the hall in the following order:

President Le Conte; Adjutant-General Backus; Dr. Payne, Chaplain of the University; members of the Faculty; the Regents; graduates and students from other colleges and universities, and the graduating class and cadets.

The band of the Fourth Artillery played a selection while the faculty took their seats upon the stage. On the stage were president Le Conte in the chair, supported on his right by Adjutant-General Backus; and upon his left by the Chaplain Dr. Payne; Regents, J. West Martin, J. W. Winans, J. L. Beard, Hon. Fred M. Campbell—State Superintendent of Public Instruction—J. M. Moss, Rev. Horatio Stebbens, Mr. LaRue, Rev. Drs. Platt, Pierce, and Eaton; the Faculty of the University, members of the faculties of the Toland Medical College, the Hastings Law College, the Coggswell Dental College, the College of Pharmacy—all being adjuncts of the present institution.

At 11:25 the exercises opened with a prayer from the chaplain, Dr. Payne, followed by an oration by Milton S. Eisner. The speaker took for his subject "The Force of Individuality." Miss Millicent W. Shinn read an essay upon "The Real Source of Satisfaction in Life," and was followed by an oration by S. A. Chambers, entitled, "An Evil and its Remedy." Hon. J. W. Winans then delivered the address to the graduates. Following the oration Adjutant-General Backus was introduced, who then presented the commissions to the members appointed by him to military rank, in the following order:

Major—O. M. Enslow.

Captains—L. P. France, H. W. Carroll, S. A. Chambers, A. L. Whitney.

First Lieutenants—A. N. P. Connor, H.

C. Perry, A. D. Tenny, L. G. Herring, J. E. LaRue, L. H. Long.

Second Lieutenants—M. S. Eisner, H. W. Fraser, J. P. Gray, J. P. Conrad.

After the newly commissioned officers had retired, president Le Conte delivered an able address to the graduates, setting forth the requirements of the University.

At the close of the president's address, he conferred the Degrees of Honor upon the graduates as follows:

Bachelors of Philosophy—College of Science—Geo. A. Atherton, Nevada; F. H. Atwater, Petaluma; H. W. Bodwell, San Francisco; H. W. Carroll, Sacramento; G. E. Colby, Oakland; J. G. Conrad, San Francisco; E. V. Cowell, Santa Cruz; O. M. Enslow, Oroville; L. H. Long, Vallejo; H. C. Perry, Gilsonville; F. H. Rothschild, Los Angeles; E. H. Shepard, San Francisco; A. H. Weber, San Francisco.

Bachelors of Philosophy—College of Letters and Literary Course—Sarah Bolton, San Francisco; M. Edith Briggs, Berkeley; E. L. Collins, Oakland, W. Dinsmore, Rohnerville; J. H. Durst, Wheatland; D. W. Fox, Garden Valley; L. N. France, Gridley; J. P. Gray, Berkeley; L. G. Harrier, Vallejo; H. R. Havens, Oakland; Mary A. Hawley, Oakland; J. Hoesh, San Francisco; G. Hewes, Nevada City; J. E. LaRue, Sacramento; M. C. Meyer, San Francisco; W. E. Osborn, Sacramento; A. L. Whitney, Petaluma; Katie F. Woolsey, Berkeley.

Bachelors of Art—S. A. Chambers, Sacramento; A. A. D'Ancona, San Francisco; Belle D. Davis, San Jose; M. S. Eisner, San Francisco; C. C. McCarty, Seattle, W. T.; Lulu E. Medbery, M. J. Platshek, San Francisco; M. Seeligsohn, San Francisco; Millicent W. Shinn, Niles; A. D. Tenney, Oakland.

University Medal—Mary A. Hawley.

Miss Jennie Angel, a graduate of the Alameda High School, last year, is now teaching in Washington Territory.

Prof. A. F. Craven, principal of the Alameda High School is spending his vacation in Washington Territory.

Professor Keep, of the Alameda High School, is rustivating at Monterey during vacation.

Miss Carrie Haven is quietly enjoying her vacation at Placerville.

Professor Bernard Moses of the State University, and Miss Edith Briggs, who graduated from that institution this year, have recently been united in the bonds of matrimony.

Miss Vesta L. Beck is the champion speller of the Centerville school. Mr. W. A. Yates is the efficient principal of this school. It is, we believe, his sixth year.

Mr. Kirk, of Harrisburg, will remove to Fresno to take charge of a school in that county.

A number of Alameda people have been having a couple of weeks of camping in the vicinity of Sunol, among whom were professors Ingham and Bissell.

Oakland has a population of 35,000.

The number of children between five and seventeen years of age in Oakland this year is 7,973. This is an increase of about 400.

BUTTE COUNTY.

Mr. and Mrs. L. P. Norman of Cherokee are spending their vacation in San Francisco. Mr. Norman has for some years been the efficient principal of the Cherokee schools, which consist of four departments.

CALAVERAS COUNTY.

Miss Eunice Gallagher, formerly teacher of the primary department of the San Andreas school has been engaged to teach the Campo Seco grammar school.

West Point School, under the supervision of W. C. Green, completed its spring term by giving a very entertaining exhibition.

The Calaveras Teachers' Association assembled May 29th, there being thirteen members present. The exercises extended throughout the whole of the day, and con-

sisted of readings, music, discussions, etc. The next meeting will be held on the last Saturday in August.

Mr. E. F. Floyd has opened a private school in the public school-house at Murphy's, commencing with thirty scholars.

CONTRA COSTA COUNTY.

County superintendent A. A. Bailey is contemplating moving to Martinez, as under the new law a salary will attach to that office, which will prevent the incumbent from teaching.

Mr. John Manzer, late principal of the Martinez public school, has moved to Santa Clara. He was recently elected principal of the large grammar school in that city.

Mr. Clement, lately grammar school principal and city superintendent of the Oakland school department, will take the place of Mr. Manzer, as principal of the Martinez public school.

COLUSA COUNTY.

Z. F. Wharton has been elected principal of the public school at Meridian, a position filled by Mr. Larkin last year. The latter now takes charge of the Webster school at Colusa.

HUMBOLDT COUNTY.

Mr. Frank Clybourn, who has been teaching in the Coffee Creek district, will assist Fablinger in the Rhonerville schools when they open in July.

KERN COUNTY.

Miss Mills, who was assistant in the Sumner school has been teaching a private school at Caliente, since the close of the term.

Petitions are in circulation for three new school districts in this county, as well as the division of another district, forming in all four new districts.

LOS ANGELES COUNTY.

Fifty-four applicants presented themselves at the teachers' examination June 8th. Twenty nine certificates were granted—six first grade, and twenty-three second-grade. The studies examined in, and the maximum credits in each are as follows: Arithmetic 100 credits; grammar 100; orthography 50;

methods of teaching 50; history of U. S. 50; reading 50; word analysis 50; composition 50; geography 50; penmanship 25. Total for second-grade 575. For a first-grade certificate the following additional studies are required: Algebra 50; natural philosophy 50; physiology 50; natural history 50; principles of civil government 50; English and American literature 50; school law of California 25; vocal music 25; industrial drawing 25. Total for first-grade 1000.

The County Board of Education held a session June 16th, for the adoption of text books. McGuffey's Readers, Swinton's Grammars, Harper's Geographies, Anderson's History of the U. S., Hutchinson's Physiology, Thomson's Algebra, Avery's Natural Philosophy, Swinton's Word Book and Word Analysis, were adopted. The arithmetics now in use were re-adopted with the exception of Colburn's Intellectual, which was changed for Thomson's Intellectual. The City Board of Los Angeles adopted Reed & Kellogg's Grammars, and Fish's Arithmetics.

The graduating exercises of the Anaheim High School were held June 3d.

A class of fifteen graduated from the Los Angeles High School. The exercises were held in Turn Verin Hall Thursday, June 17, afternoon and evening.

The Los Angeles city schools closed Thursday, June 24. They will re-open the first Monday in September.

MODOC COUNTY.

Miss Birdsall has been having a severe attack of sickness, and has been in Los Angeles. She is reported as fully recovered and able to take charge of her school again.

The school in Washington district has been in session since May 31st. Mrs. Emma Woodmansee is the teacher in charge.

MONO COUNTY.

The school census of Bodie will foot up to 500 children.

MONTEREY COUNTY.

Principal Wilson of the Castroville school, will spend his vacation in San Jose.

Miss Addie G. Smith of San Francisco, will teach the intermediate department of the Castroville public school, taking the place of Miss Auld, who has accepted a position in Santa Clara. Principal Wilson and Miss Stirling will retain their places in the school.

NAPA COUNTY.

Miss V. R. Kimball, formerly a teacher in the Vallejo schools, has resigned her position in the Napa Collegiate Institute, and will go to San Francisco. The vacancy will be filled by Miss Ida Norton, of the class of 1876.

PLACER COUNTY.

For the first time since the organization of the school, the graduating class of the Colfax public school, Mr. Damon, principal, held appropriate exercises at the end of their school term. These exercises were creditable to teachers and pupils alike, and called out a good attendance of the townspeople.

Miss Bennison has been giving instruction to classes in elocution both in Auburn and Newcastle.

SAN FRANCISCO COUNTY.

The census report for this year shows 84,000 children as compared to 88,000 last year, a decrease of 4000. Though the city has not grown, this still appears a remarkable and unaccountable showing.

Miss Emma Marwedel's well-known kindergarten and class for the training of kindergarten teachers, have been removed from Berkeley to this city. She has located on Van Ness avenue near Clay street. Miss Marwedel has no superior and but few equals in kindergartening, and our young teachers, and especially those who desire to become thoroughly acquainted with the ideas and methods of Froebel, will do well to avail themselves of this opportunity.

The new course of study has been completed. It includes the study of physiology in the grammar grades, and gives two and a half hours a week to bookkeeping in the first-grade.

Contracts have been let for the building of three new school-houses, involving an

expenditure of about sixty thousand dollars. This department is treading in the footsteps of some of the western cities in one respect, *i. e.* the erection of school-houses at the expense of underpaid teachers. The Board will probably show a saving of eighty or ninety thousand dollars this year, but every cent of that amount has come out of the salaries of teachers, especially of our primary and grammar school assistants. In one respect, our school buildings differ from those of western cities. There they are handsome and substantial—here they are flimsy, wooden structures that necessitate within ten years a doubling of the original outlay in repairs and repainting.

The school estimate for this fiscal year is \$750,000 against \$900,000 for the year past. Out of salaries, of course. The expenditure in other departments of the city government has increased from five to ten per cent. In school management (*i. e.* teachers' salaries) the decrease is $16\frac{2}{3}$ per cent.

It is now three months since the teachers of this city have received any salary. There is money enough in the treasury, but the law's delays are responsible for much inconvenience, and even actual suffering. For the first time in the history of this department, teachers have not received their warrants when pay-day came. Many have been compelled to borrow, in some instances, losing three or four per cent. of their minimum salary. The cause of all this is the delay in bringing the Traylor Act before the courts; and delay in appealing from judge Wilson's decision after he had decided in favor of its constitutionality. We do not know where the blame belongs. We do know that it does not belong to superintendent Taylor, for he has done all in his power so to expedite matters that teachers may receive their just dues.

Charles H. Ham, the principal of the Broadway school, who was suspended for six months, has been reinstated in the department.

The Board at one of the June meetings appointed the following Board of Examiners: Joseph O'Connor, Silas A. White, Selden Sturges, and James Denman. In electing Mr. O'Connor, the Board did itself

honor; Mr. White ranks as one of our busiest and most efficient principals, and Mr. Sturges is one of the finest scholars (especially in mathematics) in the State.

The salary of Mr. Geo. W. Wade, clerk of the Board was raised to \$125 per month. Mr. Wade deserves this addition.

Mr. George Brown, the efficient principal of the Hayes Valley school, one of the largest grammar schools in the State, was married to Miss Mary F. French, a teacher in the Bernal Heights school. Miss French is a cousin of John Swett, from whose residence the marriage took place.

Among the teachers promoted during the month of June were Misses D. Sloss, Pauline Raphael, D. W. Tiedeman, M. Maxwell, F. Hawley, C. Morton, and F. A. Stowell. Also in the Pine and Larkin street schools, Misses Louise Templeton, Winnie White, V. Bradbury. In the Lincoln school, Misses L. N. Randolph, Wilson, and Mrs. Palmer.

Between five and seventeen years of age, there are 58,482 children in San Francisco. Of these there are 37,012 enrolled on the registers of the public schools, and 6,652 attending private schools; and 14,828 are reported as not attending any school. Supt. Taylor reports the number registered this year as 3000 less than the year preceding.

The population of this city, as far as ascertained by the U. S. Census will not reach 250,000.

The Board has determined to establish an "experimental kindergarten" on Jackson street, near Davis on the city front. Miss Flora Van Denberg will probably be elected to conduct it.

The Board of Directors of the Free Kindergarten Society of San Francisco, consisting of Solomon Heydenfeldt, Rev. Dr. Stebbens, Dr. J. O. Hirschfelder, S. Nicklesburk and John Swett, have granted Miss Katherine D. Smith, principal of the Silver Street Kindergarten, leave of absence until August 1st, for the purpose of visiting similar institutions in the East, and adopting such improvements as she may find necessary or desirable.

SANTA CRUZ COUNTY.

Prof. E. C. Newell, vice-principal of the Santa Cruz high school, has resigned his position. It is the intention not to re-fill the vacancy, but impose the extra labor on Miss Galbraith and Prof. Anderson.

On Friday afternoon June 11th, the graduating exercises of the Santa Cruz high school took place in the Santa Cruz Opera House. After the program of songs, essays, and addresses, Rev. J. L. Trefren presented the diplomas to the graduating class.

The loss to the school fund of Santa Cruz by the defalcation of the recently convicted treasurer Otto, has resulted in a general reduction of teachers' salaries in that city. This occurrence is greatly to be regretted. Last year's salaries were none too high for a corps of teachers second to none in the State, and superintended by a gentleman of the culture and ability of Prof. W. W. Anderson. It is not too much to say that this is a model department. While Prof. Anderson's work has been chiefly in the high school, he has yet exercised a constant and watchful supervision over every class in the department. In fact, Santa Cruz proves that neither "Quincy methods" nor text-books, nor modern schoolhouses make good schools—but that good teachers are essential.

SANTA CLARA COUNTY.

At the examination for teachers' certificates held in this county last month, one first-grade and two second-grade certificates were granted to pupils from Prof. Oliver's high school at Gilroy. This is Prof. Oliver's seventh or eighth year in that school, and his pupils uniformly show that they have been splendidly trained. In fact it has, for years, been acknowledged in Santa Clara county that the pupils from the Gilroy high school rank highest at the teachers' examinations, and make excellent teachers.

The closing exercises of the Gilroy high school took place in the Presbyterian church at that place, Tuesday evening, June 8th. The attendance was large, and the exercises very interesting. The graduating class, five in number, were presented with their certificates of graduation by their

principal, A. W. Oliver. Mr. H. W. Briggs, of the Board of Trustees, then made some appropriate remarks to the class, and was followed by professor A. W. Oliver, who made a parting address in relation to high schools.

SAN JOAQUIN COUNTY.

The Commencement exercises of the Stockton high school, Prof. A. H. Randall, principal, took place on Thursday evening, June 24th, and were highly entertaining. The diplomas were awarded to the graduating class, five in number, by I. R. Wilbur. The exercises closed with an address by Rev. John Coyle. Under professor Randall's highly competent instruction, the Stockton high school now takes rank second to no similar institution in the State.

SISKIYOU COUNTY.

The teachers of this county held an interesting Institute June 15-19. The editor of this JOURNAL was expected to attend, but on account of the death of his father, was not present. Principal J. B. McChesney of the Oakland High School, assisted superintendent H. A. Morse in conducting the exercises. For its number of first-class teachers, Siskiyou is one of the banner counties of the State. Many of these took active part. Supt. Morse presided, Geo. Rice was elected vice-president, and John Kenneday was unanimously chosen secretary.

After the delivery of superintendent Morse's annual address, Mr. John Kennedy delivered an eloquent and appropriate address of welcome.

Essays were read during the sessions of the Institute by Miss Ingersoll on "The Nature and Responsibility of the Teachers' Vocation," Mr. P. Peterson on "The School System and its Management," Mr. C. R. Hagar on "Writing," and an original poem "Only a Pedagogue." From the account we have received, we judge the musical exercises at this session were as good as when the editor of the JOURNAL attended a year ago. We see the names of Mrs. H. H. McKay, Mr. and Mrs. Camp, Mrs. Denny, Miss Clara Hovey, Messrs. Evans and Peterson, and Miss Mollie Clelland. Some excellent readings and recitations

were given by Miss Wheaton, Miss Hattie Hagar, Mr. Laird, and Mr. Chambers Prof. McChesney lectured on the various subjects of the school course, notably on Language, Arithmetic, Penmanship and Reading. The Institute was resolved into a class, and exercises in articulation, breathing, whispering, etc. were given.

Prof. McChesney also lectured on "Astronomy." His instructions proved not only very valuable but highly interesting. Among the resolutions unanimously adopted were the following :

Resolved, That the thanks of this Institute, are due, and are hereby tendered to our president, vice-president, and secretary, Messrs. Morse, Rice, and Kennedy ; to the Trustees of Yreka School District, for the use of this room; to the press, for their willingness to publish the proceedings of this body ; to the citizens of this place and elsewhere, for their aid and attendance, and to Prof. J. B. McChesney of the Oakland High School, who has gratified and instructed us by his expositions upon educational topics.

Resolved, That in the opinion of the teachers of this county, the PACIFIC SCHOOL AND HOME JOURNAL is a valuable and necessary auxiliary in our school work, and that we would rejoice to have it made the official organ of this State. We would also suggest that it is the duty of all teachers to sustain the same.

SUTTER COUNTY.

Supt. O. E. Graves has resigned the superintendency of the schools of this county, to accept the principalship of the Red Bluff schools in Tehama county. Mr. Graves is a gentleman of culture, and has been an efficient public servant. Sutter county loses by his resignation, and the Red Bluff schools are to be congratulated on the acquisition. We have not yet learned who is his successor.

SOLANO COUNTY.

Mr. Allan P. Sanborn, of the Benicia public school, is rustivating in Grangeville, Tulare county.

Grant district school, Mrs. Eddie Udell, teacher, closed the spring term with appropriate exercises. Singing, speeches, distribution of prizes, etc. Mrs. Udell is well liked, and has been retained.

SONOMA COUNTY.

The County Board of Education of this county have adopted a model course of study.

TEHAMA COUNTY.

Levi Van Fossen, late principal of the Red Bluff public school, has sold his fine cabinet of minerals and fossils, together with his library of scientific works, to professor Gans, of the Academy of that place. Mr. Van Fossen has left the profession and gone into business in Gridley.

ANNUAL EXAMINATION OF THE PUBLIC SCHOOLS OF SAN FRANCISCO.

[*Second Grade—Arithmetic.*]

1. Add \$3289.75, \$5564.09, \$375.27, \$992.50, \$7761.03 and \$84.85. Subtract \$17466.49 from the sum of these numbers. Multiply the remainder by 846, and divide the product by 94.

2. An upholsterer has 125 yards of carpeting of one kind, 175 of another, and 225 of another. He wishes to divide the whole into pieces of equal length, and the longest

that can be obtained. What must be the length of each piece ?

3. $7-24+\frac{2}{3}+5-11+6-8+7-9=\text{What?}$

4. A room is 5 yards wide, and $5\frac{1}{2}$ yards long. How much will it cost to carpet it with yard-wide carpeting at \$1.10 per yard?

5. (a) Solve the following by cancellation: $8-9 \times 6-7 \times 21-37 \times 74-27 \times 513-4$.

(b) Find the cost of 8-15 of $12\frac{1}{4}$ yards of cloth, at 1-5 of $7\frac{1}{3}$ dollars a yard.

6. Find the sum of Six and thirty-seven millionths, Twenty-one and three hundred thirty-nine hundred thousands, One hundred and one hundredth, Ten and thirty-three thousand eight hundred seventy-three millionths, Ninety-one and seven ten thousandths. Multiply the sum by Five and sixty-eight hundredths, and divide the product by one and six-tenths.

7. Find the cost of 84 lbs. coffee at $24\frac{2}{3}$ cts., 91 lbs. sugar at 11 3-7 cts., 57 lbs. starch at $12\frac{2}{3}$ cts., and 55 lbs. indigo at 17 4-5 cents.

8. (a) Find the interest of \$400.50 for three years, six months and fifteen days, at nine per cent. a year.

(b) Reduce 7 lb. 10 oz. 16 pwt. 11 gr. to grains, and prove by reduction ascending.

9. A capitalist has an average income of 7 cents a minute. If he spend two thousand dollars a month, how much money will he lay by in three common years, not counting interest.

10. I buy four lots of goods, as follows: One lot amounting to \$785.25, on which the merchant throws off 5 per cent. for cash; another of \$400 on which I get $4\frac{1}{2}$ per cent. off; another of \$163.50 on which I get 6 per cent off; and a fourth lot of \$679.75, on which I get a discount of $7\frac{1}{2}$ per cent. How much cash will pay all four bills?

[Second Grade—Grammar,]

1. (a) What do you understand by *case* in grammar?

(b) Write three sentences illustrating the use of the different cases, in order.

2. Write the possessive plural of woman, Henry, princess, thief, garden, gardener.

3. (a) Write a sentence containing the possessive singular of *who*.

(b) Write a sentence containing the superlative degree of *out*.

4. (a) Write four sentences containing verbs in four different moods. (4 cr.)

(b) Write a sentence containing a *verbal* noun. (2 cr.)

5. Write four important rules of construction. Give a sentence illustrating each rule and underline the illustrating word in each. (One credit for each rule and a half credit for each sentence.)

6. Correct the following sentences:

Note—Write each sentence as given, underline each error, and write the correct word above.

1. I passed a woman and girl on my way to school.—2. Those sort of scholars give a great deal of trouble.—3. The banana tastes sweetly.—4. The blame is their's, not mine.—5. I did not get no dinner yesterday.—6. Speak plain, write careful, and spell correct.

7. (1) De Lesseps, the engineer of the Suez Canal, was born in France.—(2) Sound the loud trumpets!—(3) Henry George, who has written a remarkable book called "Progress and Poverty," is a resident of San Francisco.

(a) Case of *engineer*. (1 cr.)

(b) Mood and tense of *sound*. (1 cr.)

(c) Analyze No. 3. (3 cr.)

(d) Case of *resident*. (1 cr.)

8. Change the following simple sentences to complex:

1. I know her to be my friend.—2. I found the forest to be dark and dreary.

3. The assassin committed suicide.

9. Give a synopsis of the verb *find* in the third person, singular, indicative and potential moods, passive voice.

10. Write not less than half a page on *Golden Gate Park*, giving, as much as possible, the results of your own observation.

Note—Correct for spelling, capitals and grammar.

[Third Grade—Arithmetic.]

1. Add \$476.29, \$587.54, \$99.90, \$724, \$668.08, \$1297.75, and \$62.63. From the sum subtract \$2978.19. Multiply the remainder by 623, and divide the product by 89.

2. Find the cost of 729 lbs. soap at 7 5-9 cts.; 824 lbs. starch at $11\frac{3}{4}$ cts.; 325 lbs. copperas at 7 4-5 cts.; and 495 lbs. indigo at 15 5 11 cts.

3. $5-12 + 11-18 + 2-3 + 13-6 + 17-4 + 5-7 = ?$

4. Divide the product of $77\frac{1}{2}$ and 17 3-5 by the difference of the same numbers.

5. How much will it cost to buy a city lot worth $2\frac{2}{3}$ cents a square inch, the lot measuring 15 4-5 yds. by 90 feet?

6. A whitener agrees to whiten the walls and ceiling of a hall for 9 cents a square yard, deducting nothing for doors and windows. If the hall measures $62\frac{1}{2}$ ft. long, 40 ft. wide and 16 ft. high, what will it come to?

7. If a man has an income of \$275 per month, and he spends on an average, \$4,000 a year, how long will it take him to accumulate a debt of \$7,700?

8. Find, by cancellation, the product of

$$7 \cdot 26 \times 13 \cdot 14 \times 51 \cdot 27 \times 81 \cdot 17 \times \frac{3}{4} \times 32 \cdot 9 \times 15 \cdot 16 \times 8 \cdot 9.$$

9. How much will it cost to build a tight board fence 6 ft. high, around a yard $65\frac{1}{4}$ ft. long, and 32 ft. wide at $16\frac{1}{2}$ cents a square yard?

10. What is the value of a lot of old jewelry weighing 7 oz. 15 pwt., at \$16.50 per oz.?

[Third Grade—Grammar.]

1. Write five sentences containing the following, in order:

1. An abstract noun.—2. A personal and a relative pronoun.—3. A limiting and a qualifying adjective.—4. A transitive and an intransitive verb.—5. A simple and a conjunctive adverb.

2. (a) What is an adjective called which may by itself represent a noun? Give an example. (3 cr.)

(b) What is a relative pronoun? (2 cr.)

3. (a) Write a sentence containing a predicate adjective and a predicate nominative.

4. Write a sentence containing an interrogative pronoun.

5. Write a sentence containing a predicate adjective.

6. Compare, ill, little, many, late, old. (Where there are two forms, give both.)

7. Write sentences containing—

1. The future indicative of *discover*.—2. The past subjunctive of *remain*.—3. The past subjunctive of *see*.—4. The present imperative of *come*.—5. The present infinitive of *swim*.

8. Parse, briefly, the underlined words in the following sentences:

1. O my *father*, if I *never* left your *side*!
2. Our *work* being done, we *indulged* in a little recreation.

9. Correct the following sentences:

Note—Write the sentences as given, underline the errors, and write the correct word just above.

1. Them boys have n't never been at the Park.—2. We could n't find no ferns, and so we come back home.—3. I should try to be a better boy if I were him—4. Who did you find in the garret?—5. Him and me seen the lion.

10. Write not less than half a page on the subject of *Ships*, telling what you have seen or read about them.

Note—Take off half a credit for each error in spelling of capitals, and one credit for each error in grammar.

[Fourth Grade—Arithmetic.]

1. Add \$198.56, \$209.35, \$521.89, \$56.56, \$228.40, \$99.01 and \$32.50. From the sum subtract \$789.08, multiply the remainder by 289 and divide the product by 17.

2. A merchant has \$526.75 on the morning of May 7th. During the day he receives various sums, as follows: \$7.40, \$91.65, \$3.25, \$1.80, \$214.50, \$50.70, \$41.40 and \$16.20. He pays out during the same day, as follows: \$152.00, \$75.60, \$49.49, \$15.30 and \$258.89. How much cash will he have on hand at night?

3. $(5 \cdot 17 \text{ of } 2890) + (3 \cdot 37 \text{ of } 2590) + 11 \cdot 19 \text{ of } 1710 + (7 \cdot 13 \text{ of } 96113) =$ What number?

4. Divide the product of 998 and 843 by their difference.

5. Find the cost of

78 horses @.....	\$14 7-13
87 "	25 1-29
91 "	53 5-7
121 "	47 1 11

6. Add $46\frac{3}{8}$, $52\frac{1}{2}$, $63\frac{3}{4}$, $77 \cdot 9 \cdot 16$, $32 \cdot 5 \cdot 6$, $12\frac{1}{2}$, and $42\frac{1}{2}$.

7. (a) $17 \cdot 20 - 3 \cdot 7 = ?$

(b) If I owe \$34 $\frac{1}{2}$ and pay \$29 4-5 of the debt, how much will I still owe?

8. If a man build $37\frac{1}{2}$ rods of stone fence in ten days how much will he build in $23\frac{1}{2}$ days?

9. A man worked 36 days at \$1.75 per day. At the expiration of the time there were charged against him for board \$15.50,

clothing \$9.25, and sundries \$5.00. How much was due him?

10. A man bought a ton of hay for \$15 $\frac{3}{4}$, a barrel of flour for \$9 5-12, and a barrel of apples for \$3 7-16. What change will be returned to him for two twenty-dollar pieces?

[Fourth Grade—Grammar.]

1. Arrange the classes of words in the following sentences, in separate columns:

1. Between the two hills, lay a quiet and beautiful valley.—2. For the sake of emphasis, a word may be placed out of its natural order.—3. Chirping merrily, the bird flew away.—4. I, who now addresses you, am the friend of your family.

2. What are the *elements* of a sentence?

3. What is a sentence? Give examples of four kinds of sentences.

4. Write—

1. A declarative sentence, containing a transitive verb, modified by an adverb. (2 cr.)—2. An interrogative sentence, containing two limiting adjectives. (1 cr.)

—3. A sentence with the subject modified by an adjective phrase. (2 cr.)

5. Give examples of a predicate adjective and a predicate nominative.

6. Write three sentences containing—

1. Two personal pronouns.—2. A relative pronoun.—3. An interrogative pronoun.—4. A proper adjective.

7. What is the *antecedent* of a relative pronoun? Give an example.

8. Write two sentences in which the subjects are modified by a noun in apposition.

9. Correct the following sentences:

1. I knowed he done it, for I seen him do it.—2. Him and me is friends.—3. Them's good cows.—4. My father hain't got no money.—5. We come to school yesterday at nine o'clock.

10. Write not less than ten lines about "The Elephant,"

Note—Correct with regard to errors in spelling, punctuation, and grammar.

[Fifth Grade—Arithmetic..]

1. Add 672, 878, 297, 451, 227, 889, 476, 821, and 627. Subtract 1983 from the

sum, multiply the remainder by 75 and divide the product by 68.

2. If 25 gallons of water will leak out of a tank in a minute, how much will leak out in a day?

3. A trader has on hand in the morning \$53.50, and during the day, according to his sales book, he takes in \$75 for goods sold, and two debtors pay their back bills of \$11.40 and \$13.50. He pays out, however, for rent of store \$32, for goods bought \$20.50, and for sundry expenses \$7.65. How much cash will he have on hand at night?

4. Divide 78240 by 98.

5. Multiply the difference of \$1111.11 and \$982.03 by 47.

6. Find the amount of the following bill:

738 yards muslin at 14 cents.

75 barrels sugar at \$12.50.

518 yards cloth at \$2.62.

234 pairs boots at \$3.75.

7. $(7-9 \text{ of } 99) + (5-8 \text{ of } 72) + (3-5 \text{ of } 90) + (6-7 \text{ of } 343) + (10-11 \text{ of } 1210) = ?$

8. If I lose half my money and \$50 more, and have \$10 left, how much had I at first?

9. Reduce to improper fractions 27 5-11, 55 5-9, 81 2 $\frac{1}{2}$, 53 $\frac{2}{3}$, 80 4 5.

10. Five men own a ship valued at \$14,750. The share of one man is worth \$5,500, of the second is worth \$2,850, of the third \$2,500, and of the fourth \$1000. What is the share of the fifth owner worth?

[Fifth Grade—Grammar.]

1. Arrange in columns all the words in the following sentences:

1. The whole city turned out to welcome the illustrious guest.—2. In the night, the beautiful stars shine brightly, and the quiet moon sails across the heavens.

2. Write—

1. A sentence containing a limiting adjective and a descriptive adjective. (2 cr.)

—2. One containing a proper noun and a proper adjective. (2 cr.)—3. One containing an adverb and an intransitive verb. (1 cr.)

3. Name—

1. Three prepositions.—2. Three adverbs.—3. Three pronouns.—4. A conjunction.

4. Write one sentence containing a verb, a pronoun, a preposition, an adjective, and an intransitive verb.

5. Write ten ordinary *abbreviations*, with their meanings.

6. (a) Write five adjectives and change them to *nouns* by adding suffixes.

(b) Write five adjectives, and change to *adverbs*.

7. (a) Write a declarative sentence about a steamboat, and change it to an interrogative sentence. (4 cr.)

(b) Who said I was afraid?

What kind of a word is *who*? (1 cr.)

8. Write three separate sentences about *paper*, and join them into a single sentence.

9. (a) State four uses of capital letters, with examples of each. (4 cr.)

(b) He walks fast. What kind of a word is *walks*. (1 cr.)

10. Write a little composition about your home. Give the location and surroundings of your house and the number of rooms, and if you have a front yard, garden, or domestic animals, tell all about them.

BOOK NOTICES.

GRADED SELECTIONS FOR MEMORIZING. Adopted for use at home and school. By John B. Peaslee, A. M.; Ph. D.; Supt. of Cincinnati Public Schools. Van Antwerp, Bragg & Co., Cincinnati and New York. pp. 192.

This is a little book for which we predict a great success, so well adapted is it for the purpose designed. This purpose is not, so at least, we judge from an examination of the book, to furnish a stock of selections for Friday afternoons, but rather to introduce our children to an intimate acquaintance with the choicest treasures of English poetry.

This book is divided into nine sections, the first eight corresponding to the divisions of the graded school system, the ninth for pupils more advanced. The selections are the most choice the language affords. With rare good judgment, they are brief, there being an average of about thirty extracts for each year, and one hundred forty-five for advanced scholars. We heartily recommend this book as being precisely what is needed in our schools at this time. It is in the line of the teaching of the day, and represents what the best teachers have been and are trying to do with materials insufficient until its appearance.

NATURAL PHILOSOPHY FOR BEGINNERS. By J. Todhunter. London: Macmillan & Co. 1877.

This book is issued in two parts or volumes. Part I. is devoted to the mechanical properties of solid and fluid bodies, and Part II. to what Dr. Whewell has called the Secondary Mechanical Sciences; namely,

those relating to sound, light, and heat. We can safely recommend these volumes both to the theoretical and experimental student. The style is simple and direct and without unnecessary verbiage. Great care has evidently been observed in the statement and elucidation of fundamental principles on what the reader should entertain correct notions from the start. Nothing is more discouraging to the beginners in the study of a science, or presents a greater obstacle to his ultimate success than to be compelled to undo previous work, because of false impressions from slovenly statements. We think this work will be found singularly free from faults of this character. Over five hundred examples furnish the student ample opportunity to test his ability to make practical applications of his newly acquired knowledge.

THE ELEMENTARY PRINCIPLES OF SCIENTIFIC AGRICULTURE. By N. T. Lupton, LL. D. New York: D. Appleton & Co.

This book was prepared for the benefit of the schools of Tennessee, in which the elements of scientific agriculture are taught. We can not see that there is any place for it on our course of study; but we believe teachers in agricultural districts will find it of the greatest use in giving an occasional oral lesson to their more advanced pupils. The book is an elementary treatise; the explanations and text generally are expressed in simple language, and the lessons are systematically arranged. In the appendix there are many questions, and also a large number of simple experiments. The latter require little or no apparatus, may be

made to illustrate many valuable lessons, and are especially adapted for country schools. The book contains so much valuable information condensed, and so clearly expressed, that every farmer would find it an excellent work to have at hand. If in the school library, too, it would often be consulted.

ELEMENTARY LESSONS IN ENGLISH. Part First. How to Speak and Write Correctly. By W. D. Whitney of Yale College, and Mrs. N. L. Knox. Boston: Ginn & Heath. Oakland: F. B. Ginn.

It is difficult, within the brief space at our command, to do justice to this book. As the title implies, it is designed to give thorough and systematic drill in the use of correct English. It is certainly an ideal book on language; and the only objection that could be urged against its use, is that our schools and teachers are not yet prepared for a work of so high a standard.

To show the style, and give some idea of the contents, we will give the headings of some of the chapters. Chapter I treats of "Names, and How to Write Them;" II—of "The Statement;" III—of "The Two Parts of a Statement;" IV—"More to Learn About Names;" V—"More to Learn About Statements;" VI—"A, An, and The;" VIII—"The Inquiry;" X—"Words that Express Qualities;" and Chapter XIV (the last) "Letter Writing." This book will well repay examination.

LITERARY NOTES.

THE JULY MAGAZINES.

Appleton's Journal for July gives the second and final part of Cherbuliez's brilliant novelette, "Herr Drommel's Inconsistencies," and the conclusion of Appleton Morgan's "Shakespearean Myth;" also the "Variations of the Roman Church" by Dean Stanley; "An Adventuress of the XIXth Century;" and "The Suez Canal and Egyptian Finances."

Art in *Scribner's* for July is represented by the continuation of Mr. Brownell's careful and discriminating critique on "The Younger Painters of America." In "Topics of the Time," Dr. Holland treats of "The West Point Affair," "The Apotheosis of Dirt," and discusses "Industrial Education Again;" John Muir has one of his charming sketches of the California Alps, and Gen. George B. McClellan gives a delightful article on Sicily, entitled "From Palermo to Syracuse."

In *Harper's* for July, Mr. Richard T. Ely discusses American Colleges and German Universities, "Princes and Potentates" in 1840 (Illustrated); Mrs. Oliphant's "Queen Victoria" gives pictures of the Queen and the English royal family at the beginning of her reign; and Henry James Jr. has the first

chapters of what promises to be a fine story, entitled "Washington Square,"

St. Nicholas for July, 1880, ready June 25, has a patriotic flavor appropriate to the season; and, in an article written and thoroughly illustrated by Mr. Daniel Beard, it tells the boys and girls how to celebrate the Fourth of July.

Lippincott's Magazine for July contains two illustrated articles of a light and entertaining character. "On Spelling Reform" presents some strong arguments against the proposed change in English orthography, "Adam and Eve," and "Studies in the Slums" are continued.

The July *Popular Science Monthly* is up to its usual standard. It opens with a striking article on "The Interior of the Earth," by R. Radau; "A Vindication of Scientific Ethics," by William D. Le Sueur, is the best exposition of Herbert Spencer's ethical system that has yet been made.

The July *Atlantic* brings the last chapters of Mr. Howell's "Undiscovered Country," which is generally conceded to be the greatest novel he has yet written. Richard Grant White contributes a second article on "King Lear;" a short but striking story, "Brown's Retreat" by Miss Anna Eichberg; "Confederation in Canada;" and "Incidents of the Capture of Richmond," are a few noteworthy articles.

The second volume of *The Californian* begins with this July number. Among the many excellent articles we can name only "The Protestant Hero of the Nineteenth Century," by Prof. Bernard Moses; "A Straight Manzanita" by Charles H. Phelps (who by the way, is credited with the editorial control of what is becoming a first-class monthly magazine); "How Dr. Whitman saved Oregon" by S. A. Clarke; and "The Homestead by the Sea" by W. C. Bartlett.

We return thanks to superintendent A. J. Rickoff of Cleveland for the report of the schools of that city for 1879; also to Prof. E. W. Hilgard of our State University for a report of the College of Agriculture for 1879.

With its June issue the *Pennsylvania School Journal* completes its twenty-ninth volume. This periodical is an educational classic. It is always full of good things, is edited with great ability, in a word will compare favorably with any educational monthly in the world.

Mr. Eugene Schuyler has received proposals from St. Petersburg and Stockholm for the re-publication of his "Life of Peter the Great" in the Swedish and Russian languages, and it is said that on the completion of the work it is likely to be published simultaneously in as many as five different languages.

The statistics of the newspaper and book publishing interest of the United States are to be collected and arranged for the new census by Mr. S. N. D. North, of the *Utica Herald*.

D. Appleton & Co. have moved into a magnificent new six-story building on Bond street, New York, a few doors from Broadway.

SUPPLEMENT.

SAN FRANCISCO, JULY 14TH, 1880.

SPECIAL NOTICE.

Four Years of Educational Work Finally Recognized.

The "Journal" designated by the State Board of Education
as the

OFFICIAL ORGAN

OF THE DEPARTMENT OF PUBLIC INSTRUCTION.

At a meeting of the State Board of Education, held at Sacramento July 13th, the following resolution was adopted:

Resolved, that the PACIFIC SCHOOL AND HOME JOURNAL be, and the same is hereby, designated as the **Official Organ of the Department of Public Instruction**, as provided in subdivision 12th of Section 1521, Political Code, at an expense not to exceed \$1.25 per annum for each School District in the State.

THE LAW.

The law under which the above resolution was passed is as follows:

Twelfth—To designate some educational monthly journal as the official organ of the Department of Public Instruction. One copy of Journal so designated shall be furnished by the County Superintendent to the Clerk of each Board of District Trustees, to be by him placed in the district library. The County Superintendent of Schools shall draw his warrant semi-annually in favor of the publishers of such school journal, and charge the same to the Library Fund of the district; *provided*, that the sum so drawn shall in no case exceed one dollar and fifty cents per annum for each school district.

The publishers of the JOURNAL desire to call particular attention to the

OBJECTS FOR WHICH THIS LAW WAS PASSED,

and the designation made. It is intended that in the general departments of the JOURNAL, educational subjects shall be discussed, a faithful record of educational progress kept, and all improvements, both in the science of education and in methods of teaching, shall be thoroughly set forth. The

will serve as an efficient medium between the State Superintendent and the District Boards of the State, as well as with the County Superintendents. In it will be found answers to the various questions constantly submitted for the decision of the Superintendent. It is the purpose of the Publishers of the JOURNAL to make it in every way worthy of the recognition already received, and of future support. It will not be our aim to endeavor to secure the most of the State appropriation, and return the least possible equivalent. On the contrary, the money received from the State shall go back into the JOURNAL to make it a

POWERFUL AGENCY FOR THE IMPROVEMENT OF OUR PUBLIC
SCHOOLS,

and the elevation of their teachers. In this task we solicit the co-operation of the School Officers of the State.

WE INVITE CORRESPONDENCE

From them on all matters pertaining to the welfare of their schools. We wish here emphatically to say to all Trustees that the JOURNAL was established as a legitimate business enterprise; that it was built up by the generous aid of the teachers of the State—by their voluntary contributions. It is on their continued support that we shall still rely, in order to make our periodical a paying institution; for, as before said, the State appropriation shall be used solely to so improve the JOURNAL that the State shall get its full "value received." So, Trustees will bear in mind, and Teachers will generously remember, that

THE COPY SENT TO THE DISTRICT LIBRARY IS FOR THE USE OF
THE TRUSTEES ALONE,

And that if our periodical is to remain successful, and accomplish any good either for the school system or for the profession of teaching, it must be by the

HEARTY, UNDIVIDED, AND UNABATED SUPPORT OF THE TEACHERS.

CAUSE OF LATE APPEARANCE OF THE "JOURNAL."

The JOURNAL was all ready for mailing when the State Board met, on the 13th; so, we are compelled to issue this supplement, in order to announce the designation of the official organ. We shall endeavor, in the future, to issue promptly on the 1st of each month.

THE PACIFIC
School and Home
JOURNAL.

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ORGAN OF THE
DEPARTMENT OF PUBLIC INSTRUCTION.

VOL. IV.

SAN FRANCISCO, AUGUST, 1880.

No. 8

EDUCATIONAL POWER.

BY JOHN SWETT.

[Principal Girls' High School, San Francisco.]

THE true teacher must have the faith of martyrs. In the limited horizon of the school-room, the teacher can dimly see only the beginning of the effects of his training upon his pupils. The solid and lasting results, the building up of character, the creative power of motives, are made evident only in the wider circle of the world, and at the end of a life-time. Hence the power of the teacher, like that of the silent and invisible forces of nature, is only feebly realized. "What you would have appear in the life of a nation," says a Prussian maxim, "you must first put into the schools."

I once visited a quartz mine in the Sierra, of fabulous richness. Deep in the bowels of the earth, swarthy miners were blasting out the gold-bearing rock; above, the powerful mill was crushing the quartz with its iron teeth. In the office, piles of yellow bars, ready to be sent to the mint to be poured into the channels of trade, showed the immediate returns of well-directed labor and wisely invested capital. An hour later, I stepped into a public school-house not half a mile distant, where fifty children were conning their lessons. What does the school yield, I asked myself, on the investment of money by the State.

The returns of the mine were made mostly in solid bullion ; the school returns were all far in the unknown future.

I crossed the continent from the Pacific to the Atlantic on the grandest commercial highway ever built, and all along, towns, villages, cities, mines, farms, machine shops, manufactories, and conveying roads bore evidence of the mighty physical forces of the nation ; and when I entered a meeting of the National Educational Association in a Boston school-house, where two hundred quiet, thoughtful men and women were assembled, it seemed, after witnessing the gigantic play of industrial and commercial forces, that the school-masters and school-mistresses were lookers-on and idlers in the bustling life around. But when, in the mild summer evening, I walked under the elms of Boston Common and reflected that independence was once only a dim idea in the minds of a few leading patriots ; that the engine which had whirled me over the iron track, three thousand miles in seven days, was once only an idea in the brain of an enthusiast ; that the telegraph wires, radiating like nerves from the centres of civilization, were created by the inventive genius of an educated thinker, I realized that there is a silent power, mightier than all mechanical forces, which preserves, directs, and controls the material prosperity of a great nation.

I go out into the streets of the great commercial centre of our country. I hear everywhere the hum of industry, and see around the stir of business. I see the steamships plying like gigantic shuttles to weave a net-work of commercial relations between the new world and the old. I see the smoke of manufactories where skillful artisans are constructing the marvelous productions of inventive genius. The banks are open ; keen capitalists are on 'Change ; and the full tide of humanity is pulsating through every artery of the town. The results of business are solid and tangible. I step into the New York Normal College where a thousand young women are fitting for the profession of teaching, and if asked for the tangible results of the educational investment, the evidences are not at hand.

But when I pause to consider that intelligence is the motive power of trade ; that the city with its banks, warehouses, churches, residences, and manufactories, is the product of skilled labor ; that the steamship is navigated by means of science, and is built as a triumph of art : that science surveyed the railroad lines, and that skill runs the trains freighted with the products of industry and art ; then I begin to perceive some connection between educational forces and the material results of civilization.

Looking into the near future, I see the aisles of the school-room widen into the broad streets of the city. The boys are business men. One commands the steamship, one operates the telegraph, and another runs an engine ; one is a railroad director, and another rides over the road to take his seat in the senate of the United States. One works a gold mine, another an iron mine, and another a coal mine ; one is a merchant, one a banker, one a Wall street speculator, one is a farmer in the west, another a manufacturer in the east ; one is a merchant, another a mechanic, and a third is an inventor. The girls have become women. Some preside as queens in home circles, some are teachers, some are writers, some are artists, and others are skilled in household work. I

realize that the life of a nation is made of mothers that guard the homes, the men who drive the plough, build the ships, run the mills, work the mines, construct machinery, print the papers, shoulder the musket, and cast the ballots; and it is for all these that the public schools have done and are now doing their beneficent work. When I ponder over the far-reaching influence of the teacher and the school, I comprehend, in some measure, the relation to our national well-being, of our American system of free public schools—the best, notwithstanding its defects and short-comings, that the world has ever known. It is the duty of every teacher to strive with all his heart and with all his soul, and with all his might, to perfect a system of education which shall train a race of men and women in the next generation, that shall inherit, with the boundless resources of our favored land, something of the energy, enterprise, talent, and character of the sturdy pioneers who settled and subdued the wilderness, in addition to the refining influences of a higher culture and a broader knowledge. I hold nothing in common with faint-hearted citizens who are beginning to despair of the future of our country. The Anglo-Saxon race, even in its ruder years, always possessed an inherent power of self-government. Tell me not that now, when its stubborn vitality, expended so long in overrunning and colonizing the world, is guided by intelligence and refined by civilization—that this race is stricken and palsied by social disturbance and communism. Our country is not yet included in the long list

“Of nations scattered like the chaff
Blown from the threshing floor of God.”

When taxes are high and times are hard, the schools are subject to a running fire of criticism all along the line. Any fair scrutiny will result only in good. Only timid and despairing souls are frightened into the belief that the foundations of society are breaking up on account of over-education in the common schools. Neither representatives of the Caste of Capital nor the Caste of Culture can convince the American people that vice, crime, idleness, poverty, and social discontent are the necessary result of an elementary education among the workers of society. No demagogue, with specious statements, can lead any considerable number of citizens to regard the school-master as a public enemy.

The sentiment of most Americans is that of Daniel Webster who once said: “If I had as many sons as old Priam, I would send them all to the public schools.” The free common school is the Plymouth Rock of American liberty. If the system of free schools, as now conducted and organized, fails to meet the needs of social progress, not the extent, but the *kind* and *quality*, of education must be changed. Neither high school nor university must be lopped off from our free school system. “No system of public education,” says Huxley, “is worthy the name unless it creates a great educational ladder, with one end in the *gutter*, and the other in the *university*.” It is only through skilled labor, wisely and intelligently directed, that a people can become or remain permanently prosperous and happy; it is only by means of intelligent and educated voters that liberty can be preserved; and it is only by means of a

more complete education among all classes that humanity can rise to a higher type of social evolution. There is no slavery so oppressive as that of ignorance.

SOME REMINISCENCES OF BOSTON SCHOOLS FIFTY YEARS AGO.

BY GEORGE W. MINNS.

[Teacher Natural Sciences Girls' High School, San Francisco.]

“I will conduct you to a hill-side laborious indeed at the first ascent.”—*Milton*.

AN alderman of the city of Boston said publicly in his seat, “I cannot see that the boys and girls who leave school to-day are any better fitted to take care of themselves than they were thirty years ago.” From time to time articles appear in the newspapers, complaining of the multiplicity of studies in the common schools, and stating either that they are not better or that they are worse than they were years ago. It is true that the curriculum has been extended, but some of the branches, such as music, drawing, light gymnastics, etc., besides other benefits derived from them, afford the much needed relief to minds fatigued by the difficult studies. The list may be too long, but great judgment and deliberation are necessary in shortening it, for it would be difficult for any thoughtful committee to pronounce what studies ought to be excluded from it. Under these circumstances, intelligent teachers must endeavor to find time for the different exercises, by resolutely and heroically omitting from text-books everything that is unimportant and unessential. The present article is written to show the incorrectness of the assertion or notion that the public schools have not improved within the last half century.

The first public school which I attended was the old Boylston Grammar School, situated on Fort Hill, one of the three hills of Boston, once a landmark, but which is now levelled by the hand of man. The school-house was in two stories, the upper being occupied for the reading, and the lower for the writing department. Each room extended nearly the whole length of the building, and could accommodate some one hundred and fifty children. There was near the door a large stove, the funnel from which extended the entire length of the room to the chimney at the other end. At this end there was a large open fire-place. Wood was the only fuel used. There was an open passage-way through the centre of the room, from which the lines of seats for pupils, placed parallel to the aisle, gradually ascended to the windows. Each room was under the charge of a master and an usher, placed at opposite ends of the room, who heard recitations at the same time. We spent half the day in the reading, and half in the writing room.

The first words I heard when I had taken my seat in the school, were from a boy who read, in school-boy fashion, “I ask now, Verres, what you have to

say to this charge?" etc. I will venture to say that not a boy in the school knew what was the charge brought against Verres, or who Verres was. The most that any one could have said concerning Cicero would have been that he was "a great Roman orator." The reading-book used was "Scott's Lessons." That excellent manual, Pierpont's *American First Class Book*, was not introduced till two or three years later.

In this reading department, the only branches attended to were spelling, reading, geography, and a little grammar. There was no exercise in writing English; no one was taught even how to write a decent letter, or made acquainted with ordinary business forms. There was not a globe, a wall-map, a black-board, or any kind of apparatus in the school. Before I left, master Fox, a new principal, came, who showed us what might be called a hoop-globe, manufactured by himself, which we boys thought was quite a triumph of skill, and by the aid of which we learned more of mathematical geography than in any other way.

Master Stickney, who was the principal of the reading-school when I entered, paid more attention to *reading* than to any thing else. He was a very good reader, and pronounced like a cultivated Englishman. We spent the greatest part of the time in reading *The American First Class Book*. I do not know how many times we read it through; and we became so familiarly acquainted with it that all its most beautiful, interesting, and eloquent passages are, to this moment, fresh in my memory. I think the pupils of that school have always felt grateful to Mr. Pierpont and to Mr. Stickney for stamping upon their minds, when most tender and susceptible, the many touching, beautiful, and noble extracts with which that reader abounds. Mr. Stickney was a scholar, a man of fine literary taste, and had a great deal of sensibility; for we never read the pathetic piece by Dana, entitled "The Mother and Son," without the tears rolling copiously down his cheeks. He read to us those plays of Shakespeare from which extracts are made in the *First Class Book*, in order to enable us to understand the latter; and I remember his reading a part of "The Merchant of Venice," which so interested us that some of the boys read the remainder at home, and after school repeated the reading, under the shade of the trees on Fort Hill mall, to groups of classmates who were eager to learn whether Shylock got the pound of flesh or not. This was our first introduction to Shakespeare. Mr. Stickney did not remain long with us; and when he left, we heard that he had been dismissed by the school committee for the heinous offence of reading *plays* to us. It was no extenuation that the author was Shakespeare.

I will mention one or two instances of Mr. Stickney's peculiarities. He did not tell a boy to put a *stick* of wood, but a *billet* of wood on the fire. In punishing, he exhorted boys to bear the infliction bravely; and he often quoted, with emphasis, the words, "Cowards die many times; the valiant never taste of death but once." Whenever two boys fought, he always flogged the one who was defeated.

Master Fox, his successor, excelled in teaching geography. His explanations of mathematical geography were clear and satisfactory, by means of the

hoop-globe before mentioned, which he introduced, and which was the only piece of apparatus I ever saw connected with the school. He also had his quotation ready, whenever he used the rod; and as he laid on the usual three blows for misconduct, he would exclaim, in the words of "Old Jacob Stock," "Can't help it—can't help it—can't help that neither."

The only branches taught in the writing department were penmanship and arithmetic. This was before the age of steel pens; and the master and usher usually made the pens and set the copies out of school hours. No instruction was given from charts or the blackboard. The arithmetic used was Daboll's. We committed to memory tables (as was proper), and also the *rules*, which we followed, often without understanding them, in working out our "sums." Although I have not since seen the book, yet I distinctly remember that the "Rule of Three" filled the whole of the one hundredth page. I learnt it, and repeated it like a parrot, with no knowledge of its reasons; and I thought, when I could say this rule, that there was little more in mathematics for me to learn. Warren Colburn's "Intellectual Arithmetic" was not introduced till the latter part of my course in this school; and then for the first time did we boys begin really to understand and be interested in arithmetic.

The teachers in the writing school during my connection with it, were masters Finch and Emerson, and ushers Callender, Wheeler, and Robinson. Mr. Frederick Emerson, afterwards the author of a series of school-books on arithmetic, was the severest disciplinarian among them. He was very tall, long-visaged, and stern-looking, and we were all very much afraid of him. The others excelled in penmanship. They were good and lovable men. I remember them with great affection. Mr. Robinson died, some two years ago, at the age of ninety-two. As long as he could work, his life had been spent in the public service in the Boston schools, and when the infirmities of age compelled him to retire, the city allowed him a pension sufficient for his support. Many a pleasant word and smile have I had from that worthy and kind-hearted man.

Perhaps at this time, as well as at any other, I may refer to the subject of corporal punishment. In my school days, in the grammar schools, the rod was continually used. Monitors were appointed to notice any misdemeanors; and upon these calling out the names of any misbehaving themselves, the culprits stood in a line in the broad aisle, and when some fifteen or twenty had collected, the master "went through" them with the rattan or ferule, striking, usually, three smart blows on the hand. These then took their seats, and in half an hour or in less time, fifteen or twenty others suffered similar punishment. There was no investigation,—there was no time for any; not a question was put; every boy in the line was presumed to be guilty. I never saw any severer instrument of punishment employed than those I have mentioned. I never saw a cat-o'-nine-tails, large or small, an "iron bar," a "fool's cap," or a "hangman's cap," some or all of which were used fifty years ago in the New York public schools. The severest and most disgraceful punishment in the Boylston school (bad in its effect upon all parties) was "running the gauntlet." A number of boys stood in the middle aisle, with their legs wide enough apart

to allow the culprit to crawl on all-fours between them ; and in so doing he was beaten by them with sticks as he passed along. Of course his object was to go as expeditiously as possible, and theirs to inflict the blows during the transit. I witnessed this punishment several times while attending the Boylston school. We had, once in a while, cogent but not satisfactory arguments addressed very properly to the most backward part of us by the powerful arm of the master alone. If a boy happened to fall asleep, as would sometimes occur of a hot day, it was the practice of one of the masters to direct the boy behind him to give him a sound "fillip" on the ear, which was administered without mercy, and with the full strength of the agent selected. I was never punished in any other way than on the hand. I behaved as well certainly as the average boy ; but the number of castigations I received, may almost be said to be comparable to some of those formidable numbers in astronomy, which we can state, but of which we can form no clear conception. When I think how many they were, I am sometimes surprised to find myself alive. I could, however, deem it a sufficient compensation for what I have undergone, if I might be allowed to think that my case is "a survival of the fittest."

THE PRAYER OF AGASSIZ.*

BY JOHN G. WHITTIER.

ON the isle of Penikese,
 Ringed about by sapphire seas,
 Fanned by breezes salt and cool,
 Stood the master with his school.
 Over sails that not in vain,
 Wooed the west wind's steady strain,
 Line of coast that low and far
 Stretched its undulating bar,
 Wings aslant along the rim
 Of the waves they stooped to skim,
 Rock and isle and glistening bay,
 Fell the beautiful white day.
 Said the Master to the youth :
 " We have come in search of truth,
 Trying with uncertain key
 Door by door of mystery ;
 We are reaching, through His laws,

To the garment-hem of Cause,
 Him, the endless, unbegun,
 The Unnamable, the One,
 Light of all our light the Source,
 Life of life, and Force of force,
 As with fingers of the blind
 We are grouping here to find
 What the hieroglyphics mean
 Of the Unseen in the seen,
 What the Thought that underlies
 Nature's masking and disguise,
 What it is that hides beneath
 Blight and bloom and birth and death ;
 By past efforts unavailing,
 Doubt and error, loss and failing,
 Of our weakness made aware,
 On the threshold of our task

*Mr. Whittier has kindly placed this poem at the disposal of the "Agassiz Memorial Committee," for the furtherance of their object. His sympathetic reply to the request for its use, is as follows :

AMESBURY, 30 3 mo., 1874.

Agreeably to thy request, I send a copy of my poem on Agassiz. It is most fitting that the Teachers of our country should take a prominent part in the testimonial to their beloved master. I am sure they will all esteem it a privilege to thus manifest their love and reverence.

I am very truly thy friend,

JOHN G. WHITTIER.

Let us light and guidance ask,
Let us pause in silent prayer!"

Then the master in his place
Bowed his head a little space;
And the leaves by soft airs stirred,
Lapse of wave and cry of bird
Left the solemn hush unbroken
Of that wordless prayer unspoken,
While his wish, on earth unsaid,
Rose to heaven interpreted.
As, in life's best hours, we hear
By the spirit's finer ear
His low voice within us, thus
The All-Father heareth us;
And his holy ear we pain
With our noisy words and vain.
Not for him our violence
Storming at the gates of sense,
His the primal language, his
The eternal silences!

Even the careless heart was moved,
And the doubting gave assent,
With a gesture reverent,
To the Master well-beloved;
As thin mists are glorified
By the light they can not hide,
All who gazed upon him saw,
Through its veil of tender awe,
How his face was still uplift
By the old sweet look of it,
Hopeful, trustful, full of cheer,
And the love that casts out fear,
Who the secret may declare
Of that brief, unuttered prayer?

Did the shade before him come
Of th' inevitable doom,
Of the end of earth so near,
And Eternity's new year?
In the lap of sheltering seas
Rests the isle of Penikese;
But the lord of the domain
Comes not to his own again;
Where the eyes that follow fail,
On a vaster sea his sail
Drifts beyond our beck and hail;
Other lips within its bound
Shall the laws of life expound;
Other eyes from rock and shell
Read the world's old riddles well;
But when breezes light and bland
Blow from Summer's blossomed land,
When the air is glad with wings
And the blithe song-sparrow sings,
Many an eye with his still face
Shall the living ones displace,
Many an ear the word shall seek
He alone could fitly speak.
And one name for evermore
Shall be uttered o'er and o'er
By the waves that kiss the shore,
By the curlew's whistle sent
Down the cool, sea-scented air;
In all voices known to her
Nature owns her worshipper;
Half in triumph, half lament.
Thither Love shall tearful turn,
Friendship pause uncovered there,
And the wisest reverence learn
From the Master's silent prayer.

SOME METHODS OF TEACHING LOCAL GEOGRAPHY.

BY SELDEN STURGES.

[Vice-Principal Eight Street Grammar School, S. F.]

NO. 1. The teacher assigns the lesson, probably a half column of map questions for review. For instance, on the map of Africa, the cities, capes, lakes, rivers, and mountains are given for a lesson. No distinction is made. All must be learned alike—committed to memory. The pupil must be able to tell in what part of what country, and on which side of what river

each city or town is situated. All are of equal importance; Derr or Magadoro is just as important as Cairo or Tunis. They must also learn from what part of what country, into what water, and in what direction each cape projects. Cape Lopez is equally as important as Cape Verd or Good Hope, and so on through the list. The situation and outlet of lakes must be given; the source, direction, and outlets of the rivers, and the exact situation of every mountain peak, or situation and direction of every range.

During the recitation the teacher sits at her desk with her book open before her, one index finger carefully keeping the place in the column of questions, the other industriously racing around over the map, like a hound hunting a lost track, trying to find the place, in order to be able to say "right" or "wrong" when it is located by the pupil. This gives the pupil a good chance to take a peep at a concealed book to refresh his memory. Thus the whole list is gone through with, in the exact order of the book—not one place omitted. The next lesson is assigned (probably the same one over again) and the class is dismissed apparently as well satisfied with the performance as the teacher.

This method, of course has its good points, but they are so exceedingly small that it may require the use of a magnifying glass of very great power to see where the benefit to the pupil comes in. It is a very *easy* way for the *teacher* provided she be not easily embarrassed by the long silence necessarily following some of the answers, before she can say "right" or "wrong." True, the *memory* is being cultivated and stored with *facts* (!) which may sometime in the dim, distant future, be useful. But when?

No. 2 differs from No. 1 in that only the most important places are to be learned—the others being omitted or recited with the book before the pupil as well as the teacher. In neither of these methods is the outline map or a globe brought into requisition. The class usually manifests great interest—in trying to invent some side show to prevent old Morpheus from spreading his balmy wings over them.

No. 3. The teacher selects from the lists the places that are most important from a commercial or other standpoint; arouses the interest of the class by giving a short description of some city, or of a noted structure in some country—*e. g.* the pyramids of Egypt, or the ruins of Thebes, or the great Suez Canal—encourages them to learn from the Cyclopædia, Pronouncing Gazetteer, books of travel, or other sources, interesting descriptions of the people, products, animals, or places of the country—the origin of names, &c., &c., and the preparation of the lesson becomes a pleasure.

In the recitation the pupils are encouraged to tell what they have learned about the places mentioned in the lesson; one pupil is sent to the outline map, pointer in hand, to point out the places as they are mentioned, sometimes the teacher calls for the places, and sometimes she has the scholars call for them.

One scholar may call on the one next to him to locate or describe some place, and that one in turn, after answering, may call on the next one in the same manner. This teacher strives to keep up the interest of the class by frequently varying her methods, and not using any one until it becomes monotonous.

No. 4 introduces map-drawing, and when she assigns the lesson, draws the map on the blackboard, taking the pupils on an imaginary voyage as she draws the outline, marking the principal gulfs, bays, capes and cities along the coast as she comes to them, stopping occasionally to throw in a lively description, to keep up the interest of the class. Occasionally she has the class draw the map on their slates as she draws it on the board. When she has completed her voyage around the coast, she takes them on a journey through the interior, locating the principal cities, rivers, mountains, and lakes, as she comes to them. Not more than fifteen or twenty places are required to be learned for one lesson, as she considers a little well done, better than a great deal poorly done. She has her pupils draw the map on their slates and bring to the class three or four times before finally putting it on paper, for which she offers a prize, or extra credits.

In the recitation three or four scholars are sent to the boards to draw the map, *without the book*, while the others recite the lesson, one being sent to the map to point out the places as in No. 3.

A little time—five or six minutes—is always taken at the beginning of the recitation for a rapid review of previous lessons. This she considers very important in fixing the lessons in their minds. At the close of the recitation, and before assigning the next lesson, a few minutes are allowed for criticising the maps that have been drawn on the blackboard. Some of the best maps drawn on paper are used for ornamenting the room by tacking them up on the wall, or better, by putting them in rustic frames and hanging them up around the room.

Although each of these methods may have some good points, it is easy to see which is most profitable.

ADOLPH DIESTERWEG.

BY HENRY SENGER.

[Teacher of Latin and German, Girls' High School, S. F.]

THERE is nothing easier than fault-finding; nothing more exasperating to the quiet and steady worker than the supercilious tone and the self-admiring contemplation of the looker-on who is not yet impressed with the consciousness of his utter lack of ability to judge others. But nothing is so ungrateful as that state of public opinion which leads men to point with pride at acquirements of their own, and to look with a sort of pity on the little their neighbors possess, meanwhile forgetting altogether how but a few years ago they had nothing to boast of, and that their own institutions then were almost entirely in the same condition as at present are those of their neighbors.

Ungrateful such a behavior ought to be called, because a state of mind of

this sort can only be imagined possible, if the memory of the courage, the self-sacrifice, the ideal life, and the martyrdom of their best men, with which a change of opinion in an indolent public was brought about, is almost forgotten.

The name of the powerful man of whose life these lines intend to give a short sketch, will remain as long as there is a science and an art of education, but the condition of things which he changed so radically by his untiring energy seems to have been entirely forgotten by the present generation. I shall refrain from making any comparisons with our present situation. They will crowd on every one who has his great profession at heart. *He* wanted, above all, to make the *teachers* better and stronger in order to send forth from their schools men and women to fight a better and a stronger fight with the world. May his strongly-marked individuality, his firmness, his undaunted courage, his pure life, shine before us in the many dark hours a more than ordinary share of which seems to be the lot of the profession of teaching.

Adolph Diesterweg was born on the 29th of October, 1790, in the Westphalian town of Siegen, where his father was a lawyer. His mother was the daughter of the burgomaster of that place; she died when her youngest child, Adolph, was but eight years old. Thus his whole home education was left with his father, whose constant companion he was during his frequent travels, and it is most likely that through these he laid the foundation for those most characteristic traits of an educator of the highest rank, the accurate appreciation of the really useful and necessary in school and the marked hostility to teachers, from the university down to the primaries, who are no scholars, and to scholars who are no teachers. He learned accordingly more from nature and the persons that were connected with his family than in school, which gave the gifted boy very little satisfaction and maltreated him by its pedantic and mechanical methods.

In 1808 Diesterweg went to the then University of Herborn to study mathematics, philosophy, and history. But neither here nor at Tübingen, where he continued and completed his university course did he find any satisfaction with the studies carried on. What he really learned there he learned without the aid of any of his teachers.

He graduated in due time from the university, became a tutor in the family of a German nobleman, taught in the gymnasium of Worms for about one year, which he left to accept a position as teacher of mathematics and physics at the "Musterschule" in Frankfort on the Main.

In Frankfort Diesterweg turned over a new leaf in his calling. At the Musterschule not only several of Pestalozzi's former scholars were teaching, but the whole school was filled with the spirit of the great Swiss teacher. Moreover, it was here that he made the acquaintance of principal De Laspe of Wiesbaden, whom Pestalozzi himself had declared to be the most accomplished and the most talented of all his pupils.

In 1817 he became vice-principal of the Latin School in Elberfeld, where he found nothing but cramming and the most senseless teaching. The more he developed into a man of independent thinking, the more he grew tired and exhausted by being obliged to work in an educational tread-mill. Under such

circumstances his only recreation was found in the intimate friendship that had grown up between himself and Wilberg the principal of the grammar school in Elberfeld, a real master of his profession, and through the intimacy with a mind so closely related to Pestalozzi's he became convinced what was his real calling in life. Thus, when he was called in 1820 to the high school in Hamm he concluded to abandon teaching in higher schools and to devote himself exclusively to the lower public schools, as his great master, Pestalozzi, had done. He had, by this time, learned what was the true cause of the material and spiritual distress of the people; and above all to elevate the lower classes by instruction and education in order that even the most humble might free themselves from their misery, appeared to him to be a task worthy of the devotion of his life.

At this time the Prussian government had decided to establish two normal schools in the Rhenish provinces. He offered his services to the government, they were accepted, and he became principal of the new normal school in Moers. The new school opened on July 3d, with fourteen pupils who had to be dismissed, however, for various reasons, at the end of September of the same year. In January of the next following year school opened with another class of thirteen pupils, and in May, when the commissioners of the government visited the school for the first time, the continuance of the normal school was guaranteed.

Diesterweg had done an enormous piece of work, he was the only teacher in his school and had to teach everything; nevertheless he was happy to have succeeded in his real calling, and above all in an independent position. A short time after a new principal of the gymnasium was called to Moers, who became Diesterweg's intimate friend, and now he could concentrate his strength on a few subjects, which he taught at the same time in the gymnasium, while the principal taught at the normal school.

The two young men were energetic, they were able to show splendid work, but this was the very cause of their making enemies of a large number of people, especially the clergy of the country, both Catholic and Protestant, to whom this new departure in education became particularly obnoxious. They would prefer, thus they expressed themselves, not only in private conversation but in public, to have ignoramuses and superstitious fools to be teachers than such agitators who wanted to examine everything and would respect no authority. One of them even went so far as to forbid the teachers (in those happy days clergymen were "ex-officio" school-trustees) to give language lessons, because children might become too clever, and when one of the young teachers was plucky enough to remonstrate with him, he persecuted the poor fellow with all possible intrigues. Yet none of these fanatics ever thought fit to visit the school and see what was going on there.

Diesterweg had devoted his leisure quite often to visiting the normal school, of the western provinces; in 1825 he obtained leave of absence to visit the normal schools of the eastern provinces, and in the summer of that year he visited Berlin, where he was received with great distinction by the secretary of education. In 1827 he started an educational paper, the famous *Rheinischen*

Blatter, and remained its editor until his death. Its circulation increased every year and it became the leading educational paper, whose editor was admired by the whole country for his clear ideas and the courage with which he fought against so many rotten things which had nothing to plead for their existence but their more or less venerable age.

In 1830 the position of principal of the normal school which was to be established in Berlin was offered to Diesterweg. From year to year the primary instruction in the Prussian capital had deteriorated, and to reform it the eminently successful principal of the Moers normal school was called to Berlin. He had been in Berlin before, he knew the state of things there pretty well, and he made his conditions before accepting the new place. It took the secretary of education two years to come to a conclusion, and thus it was not until 1832 that Diesterweg took charge of the Berlin normal school to the great regret of his fellow-citizens and his scholars in Moers, where he had passed twelve happy years.

On May 15th of the same year the Berlin normal school was opened in due form by the superintendent of public instruction, and Diesterweg was introduced as principal of the school. The subject of his inauguration speech was: "The Service of the True, the Good, and the Beautiful," which he put forward not only as the aim of real life, but also of real education. In concluding his speech he professed himself ready to do his best to elevate and develop the educational system of Berlin.

And sorely was Berlin in need of his services. Her teachers were in most cases assistants who had received permission to teach from the school trustee, a clergyman, and who had to be trained by the principal somehow or other. A real training, an organized instruction, a proper examination was not heard of then; any one who had some claim to an education was considered fit to teach. The consequence was, talk on the part of the teacher, writing in innumerable blank books by the scholar, reciting what had been memorized in the text-books. No wonder that children hated to go to school and resented the detestable tyranny that was exercised over their young minds, by the utmost lawlessness and the most shocking deportment. And instead of removing the cause of the evils, new devices to suppress their effect were invented, viz: distribution of ginger-bread twice or four times a year during the fair; red, blue, green, or yellow report-cards, percentages of marks, credits and checks, so that six marks would be equal to one credit, and three credits would balance one check; and a perfectly bewildering host of those miserable tricks which the eye of a real educator can view only with the most scornful pity.

[CONCLUDED NEXT MONTH.]

Hawthorne thus wrote about himself, not a great ways this side his grave: "I have been a happy man, and yet I do not remember any one moment of such happy conspiring circumstances that I could have rung a joy-bell at it."

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[Santa Barbara County.]

CHAPTER XIII.—MAY-DAY SPORTS.

THE first day of May, was a great day at Santos. A wealthy banker who lives there built a gymnasium fronting the main street on one side, and having a vacant block of land just back. For over two years, a flourishing gymnastic society, composed of most of the young men in and near the town, had been practicing in this gymnasium, at various exercises; and on this May-day, there was to be a series of competitions, for various small prizes which the banker had declared his intention to give.

To this gymnasium John Dean repaired, accompanied by Prof. Mills and Mr. Twist who were the acknowledged leaders in the Santos gymnasium. Quite a number of John's pupils were on the ground, attracted by the prizes which were open for competition to any one living in the county.

"Will you not join in the games, Mr. Dean?" inquired Prof. Mills. "I am going to my dressing room to put on my gymnastic suit, and I have a spare suit I shall be happy to loan you."

"Thank you. I had not intended to display my awkwardness, but the sight of so many happy looking faces makes me feel like joining with them."

So John went with Prof. Mills and they soon exchanged their clothes for light, closely fitting suits of woolen.

Prof. Mills could not repress a cry of astonishment at the sight of John Dean's muscular development.

"If you know how to use all that muscle, I fear we shall be left in the shade," said he. "Where did you get it all? Not by thrashing small children?"

"I hope not," said John, laughingly. "I inherited quite a little from my father, and I have endeavored to add some to that. I think good muscles and knowing how to use them adds to one's power of moral suasion."

It was two o'clock when they began the exercises. Lawyer Twist was the master of ceremonies, and he announced that the first of the programme would consist of exercises on the horizontal bar and on the parallel bars, entitled "Follow your leader." Prof. Mills would lead on the horizontal bar, and he himself would lead on the parallel bars. One failure to follow the leader would send the person to the foot of the line. A second failure would put him out of the line.

John Dean took his place the last of the line which had already formed with Prof. Mills at the head. All went passably well through a number of simple exercises and then the line behind John began to grow longer as more difficult feats were attempted; then the line became suddenly shorter; and at the close of the exercises, which lasted about twenty minutes, but two remained between John and the professor, who now announced the exercises upon the double bars, led by Mr. Twist. In this, as in the previous exercise, John per-

formed the required actions with such an appearance of clumsiness that few of the spectators guessed his real strength.

Then came some trials of strength in lifting, in which John did not participate. Lifting at the full extent of one's strength should not be encouraged, as serious strains often result from such over-exertion. A tournament with lances and rings for the prize of a pair of silver spurs was now announced. This game is the delight of the Mexican, who has here the opportunity of displaying his horsemanship and skill before the admiring *senoritas*.

Three martingale rings were suspended about seven feet from the ground, on three irons that were fastened above to a wooden cross-bar.

The knights were to ride under these cross-bars at full speed, and carry off as many of the rings as they could by passing the points of the lances through them. The rings were about twenty-five feet apart, and, as the horses were to pass under them at full speed, it was no easy matter to succeed in getting all the rings. Each knight was to have five trials, and a failure to touch a single ring in one passage would prevent him from having another trial.

About thirty names were entered for the trial, more than half the contestants being native Californians, and many of them riding most vicious looking broncos. John's attention was attracted by a young Mexican lad who rode a coal black pony, and who seemed to wish to avoid observation as much as possible.

There was a strangely familiar air about that lad, and yet John could not remember where he had seen the boy. Turning to the judge, John inquired who the lad was.

"I'm sure I do not know," replied the judge. "I believe I have seen the boy before. He rides well. It seems to come natural for a Spaniard to handle a horse well."

"I like the looks of the boy. I hope he will win the prize," said John.

And when the contest was over and the young lad had carried off twelve rings—two more than any of the others—and had been given the prize, John approached the lad and congratulated him upon his success. The boy made an unintelligible reply in Spanish, and wheeling his horse around, was soon lost in the crowd.

A prize of a pair of boots for the best jumper was announced, and Mr. Twist told John Dean that now he would expect him to keep his promise to jump with him.

"I can beat all those other fellows," said the lawyer, confidently, "and when they have made their best jumps we will try one jump apiece for the boots. The folks from Wild-cat say you are a jumpist."

"I hardly know what kind of an animal a jumpist can be," replied John. "But I am willing to try one jump though I am quite out of practice."

"The best running jump is seventeen feet and two inches," announced Prof. Mills. "Now, Mr. Twist, set them a pattern."

"Let me put a mark to see where to begin," said the lawyer; and the crowd laughed and cheered as he rolled an empty barrel just in front of the mark from which the others had started.

"Eighteen feet and one inch," announced the professor as the lawyer made his jump over the sugar barrel.

"Now Mr. Dean, don't move my starting mark," said the lawyer, banteringly.

"No, but I want a mark to see how far to jump," said John, coolly rolling a second barrel just inside the mark to which the lawyer had jumped.

"He can never do it." "Such a jump never has been, and never will be made in this town." "He will break his neck if he attempts that," were among the exclamations of the crowd. But the result showed that John Dean had not over-estimated his own powers. With a much shorter run than the others, he fairly cleaned both barrels in a leap which measured nineteen feet and three inches.

The people cheered and crowded up to see the result of the measurement.

"If thee can use thy head as well as thee can use thy heels, thee must be a good teacher," said a staid quaker to John.

"Though my heels may be the better, I would rather lose them than lose my head," replied John.

In the standing jump John easily surpassed the few who cared to contest the matter further, and he was presented with the order for his prize.

Turning to the banker who had given the prizes, and who was the president of the Santos Benevolent Association, John requested him to accept the order, and present it to some needy person whom the society might wish to help.

A pulling contest, with a knotted-rope, between four white men and four Mexicans, unexpectedly resulted in a victory for the Mexicans.

Throwing a heavy sledge; pitching a thirty pound weight with one hand from the shoulder, without stirring either foot from the ground, and kicking a long and heavy pole, held with one hand upon the toe, as far as they could send it, produced considerable amusement, and made the receivers of several small prizes proud and happy. Foot-races were then in order, and numerous bets were made on the various small boys who were the contestants in the first race, open to all under twelve years old.

"Do you think I stand any chance, Mr. Dean," inquired Willie White, who was one of the fastest runners among the scholars at Wild-cat.

"Of course you do, Willie. Remember the directions I gave you. Do n't try to run too fast at first, and remember to save the most of your breath for the last hundred yards on the home stretch," was the encouraging reply.

The distance they were to run was three hundred yards, and, encouraged by the cheers of the crowd, about a dozen boys, from nine to twelve years old, started. Too excited to use much judgement, the most of the boys spent the greater part of their wind and strength in the first two hundred yards, and Willie overtook one after another of them until he was running side by side with a Spanish boy two years older and much larger than himself.

"I'll thrash you if you beat me," panted the Spaniard, and the threat cost him the race, for Willie, nerved by fear, got ahead of the other boy, and reaching the goal ten feet in advance, ran to John Dean for protection.

A proud boy was Willie as he stood by the engraver, and watched him cut his name on the prize silver cup he had won.

"Do you not intend trying for the honor of winning the race among the older ones, Mr. Dean?" inquired Prof. Mills. "You will have a chance to add to your collection of silver plate, you know, besides the honor, if you are not satisfied with what you have already gained."

"There goes the young Mexican lad among the contestants," replied John. "I want to see him get the prize, so I shall not run. Is n't he a handsome lad?"

"That tall burly Missourian, who came nearest to winning the spurs from the lad in the riding contest, feels sure of winning this race. I would n't like to see him get it, either, for he is a mean, quarrelsome chap, who is always trying to hurt somebody."

But five entered their names for this race, for there had been several foot races about a month before, and the Missourian had won them quite easily.

John placed himself about twenty yards back of the starting mark where he could watch the progress of the race.

The signal for the start was given, and it was soon plainly seen that the contest lay between the Missourian and the young Mexican lad. Try the best he could, the Missourian found that he could not get more than a foot or two ahead of the other, and he soon plainly saw that the lad was holding back his best running for the last of the race. At about forty rods from the end, the lad began gaining upon the other, and, angered at the prospective loss of another prize, he threw himself partly before the boy who was hurled violently to the ground.

In an instant John sprang out upon the track, and striking the Missourian with his full force, hurled him senseless to the ground. Running to the boy who was still lying upon the ground, John picked him up and asked if he was hurt. The lad's cap had been thrown from his head, and as he looked up in John's face to reply, John saw whom he held. Hastily putting the cap upon the other's head John carried him to the black pony, which was tied near by, and lifted him into the saddle. Untying the horse he said in a low, stern voice, "If you are not hurt much you had better go home and stay there. I will bring your prize to you, and I hope no one will know how you got it."

Alpha Black, for it was she, cast an appealing look into John's face, and gathering up the reins, started towards Wild-cat,

"Do you know that—that Spanish boy, Mr. Dean?" inquired Thomas Jefferson, who stood near him.

"Yes. Do you?"

"Yes. But I would n't if it had n't been for the pony. I should know that pony in Siberia if every white hair on him is blackened over," replied Thomas. "Do you think any one else knows?"

"No, I think not. Well as I know her, I would n't have mistrusted anything, if it had n't been for the pony. But when I saw the race, I was sure who it was, for she can out-run any man I ever saw. Of course I do n't intend to tell any one else."

"That is right, I will get the cup and change my clothes and we will go home," said John.

On their way back they met the Missourian, whose swollen face showed the punishment he had received. He cast a surly look at John as he passed, but did not offer to speak to him.

As John went home, he resolved to read Alpha a severe lecture on her imprudence, when he carried over the silver cup she had won, for they had decided that the cup belonged to the Mexican lad.

"The girl needs some one to take care of her," John said to himself. "If she had a good mother now, who could afford to spend a couple of thousand dollars in training her voice, she would make a singer to be proud of. She ought not to live alone as she does, and I do wonder how she manages to make a living there."

When John called on Alpha the next day and hesitatingly began his lecture, Alpha cut him short by saying :

"Yes, Mr. Dean, I know all you want to say. It was a foolish trick and I am sorry for it. But I do n't know that it was any worse than the story Thomas told me of your dressing up like a woman, and making love to those boys up country."

And what could John say to this reply ?

EDUCATIONAL GLEANINGS.

[From the Scrap-Book of a Teacher.]

ALL the great teachers, from Socrates downwards, seem to recognize the necessity of putting the learner into a state of pain to begin with ; a fact that we are by no means to exult over, although we may have to admit the stern truth that is in it.—*Bain*.

The thoughtful teacher's aim will be to cherish John Smith the bud, into John Smith the blossom ; not to turn John Smith the rose, into John Smith the fir-tree. In other words, the teacher will try to make the most of the child's special nature, but not to squeeze it into the shape of some fixed model.—*Buxton*.

Excepting its value as a substantial contribution to the enjoyment of life, I am not able to affirm that music has any influence on education, whether moral or intellectual. Certainly, if it has any effect in the moral sphere, it has none that I can trace in the sphere of intelligence. As a recreative variety in the midst of toil, it deserves every encomium.—*Bain*.

Unreasoning blind faith is indispensable in beginning any art or science ; the pupil has to lay by a stock of notions before having any materials for discovery or origination. There is a right moment for relaxing this attitude, and

assuming the exercise of independence ; but it has scarcely arrived while the school-master is still at work.—*Bain.*

Education is the only interest worthy of the deep controlling anxiety of the thoughtful man.—*Humboldt.*

No single practical method can claim universal applicability ; every one will have to be modified to be adopted, not only to every other teacher's peculiar development, but also to that of every other class or pupils.—*Cyclopædia of Education.*

ENGLISH LITERATURE IN ADVANCED GRADES AND HIGH SCHOOLS.

[From the San Francisco *Course of Study.*]

AFTER the teacher has called attention to a few points in the life, times, and character of an author, the class should take some *narrative* or *descriptive* piece and read it aloud, special attention being given to reading it in such a manner as to express clearly the thought, with such modifications of the voice as the sentiment requires. This should be accompanied by such a running commentary by the teacher as will enable the pupils to understand the story, if it is a narrative, or to form a mental picture of the scene ; not so as to interfere with the interest of the story or description, but simply what is necessary to a general understanding of the piece. It will often require an explanation of many words that are but vaguely understood by the pupils, and attention to such constructions as require elucidation. This having been done, it will be an excellent practice for the pupils to *tell*, orally, what they have read, in their own language. This may be made a class exercise by having one pupil begin and others follow,—each taking it up where his predecessor left off.

Let each pupil then write an abstract of it. The reading of the piece and the oral abstract which has been given, will have secured such a knowledge of it that the pupils will be likely to express themselves with a clearness which can come only from a full and exact understanding of the author.

Having carefully read the narrative or description, some parts of it may be taken and subjected to such an analysis as will show the relations of the clauses, phrases, and words to each other. It may be well, too, if the pupils are sufficiently advanced, to show something of the relations of logic—the grammar of thought—to grammar, which has to do with words, phrases, and clauses.

This will involve a knowledge of the parts of speech, the inflections, and the principles of syntax,—and should therefore be preceded by some review of what the pupils may be supposed to have learned previously.

After this the attention may be directed more especially to subordinate matters,—to allusions, suggestions, manners, customs, historical references, and

the like. If the selection is poetry, call attention to the metrical structure, which will involve the necessity, perhaps, of some study of prosody.

The most common rhetorical figures may be learned,—as simile, metaphor, synecdoche, and metonymy, and the selection examined with reference to their use.

Then, the words may be examined with reference to their origin, derivation, and formation. This, of course, will necessitate the use of an etymological dictionary and a knowledge of the common prefixes and suffixes.

The pupils will then be able to understand what is meant by *purity* of style, and to apply their knowledge in examining this and other selections. The habit, too, which the pupils have formed of seeing the exact meaning of words, and the force of particular constructions, will aid them in writing *clearly*.

Then may follow an exercise involving all that has been done; viz., an exercise in *criticism*, or an estimate of the merits and faults of the selection.

If it is a narrative or a description, does it give us a distinct and consistent conception of the story told, or the object described, as a whole? Or is there something wanting, or but vaguely hinted at, which is necessary to a perfect understanding of the author? A careful examination in these regards will determine its quality with regard to *completeness*.

Is there *more* than is necessary to give such a conception,—something no so intimately connected with the subject as to render the conception more vivid and well-defined, but rather to confuse? On the answer of this will depend its *unity*.

Then may follow an examination of the style. Are the words such as are sanctioned by good use?"

Are the words well chosen to express the exact ideas of the author?

Is the construction of the sentences in accordance with the idiom and syntax of the language? This, of course, will involve some knowledge of barbarism, impropriety, and solecism.

How much of the preceding should be done in the several classes, will depend on the pupils' power of appreciation, and the time devoted to study.

EDITORIAL DEPARTMENT.

THE "JOURNAL" AS THE OFFICIAL ORGAN.

THE supplement to our July number notified our readers of the designation of the JOURNAL as the Official Organ of the Department of Public Instruction. This action, unexpected though not un hoped for when July opened, was a recognition by the State Board of Education, of the labors of the JOURNAL for four years past, and an endorsement of its general attitude on the important school questions which have arisen within the period of its existence.

The PACIFIC SCHOOL AND HOME JOURNAL now comes before the educators of the coast, and the public generally, stronger in some respects than at any previous period, but with the same aims, views, and aspirations as in its stage of infancy and early growth. Though connected with the State Office of Public Instruction through the Official Department, it is not closely dependent thereon. It still remains a private enterprise, conducted on the same broad principles which induced its inception and sustained its first uncertain steps.

To advocate a coherent, logical system of popular education—"from the gutter to the university;" to raise the occupation of teaching to the rank of a profession, and protect it against impostors and educational tramps; to interest the general public in the work actually performed in our free schools; last, but not among the least, to educate the press to a true comprehension of what the State should do in providing a system of education, and what the system provided is doing for the State,—these are the prime motives which have always actuated us in the publication of this JOURNAL,—the ends we have ever had in view.

The appropriation received from the State will not enable us to accomplish all this work. The teachers who are doubly interested, must share the burden. The State aid will not sustain an educational journal of a high standard. The fate of the *California Teacher*, and a score of eastern publications, proves this. Either the teachers must continue their hearty and general subscriptions, or else the JOURNAL will degenerate and die. The teachers of the State are most directly interested, have most to gain by sustaining an outspoken, bold champion of their profession, and not allowing that advocate to lose the independence or the respect which can make its efforts serviceable. So we again appeal to our teachers everywhere, in city and country alike, not to be satisfied with the free copy of the JOURNAL sent to and intended for the District Trustees and the School Library, but to continue their own subscriptions, and wherever possible, extend them in the community. Teachers understand why the State receives the copies at so large a reduction from the regular price. The State takes more than two thousand copies in one order and is thereby entitled to a discount. But we will not disguise the fact that the price paid by the State is actually less than the cost of publication, and it is only by a liberal advertising patronage and a continuance of the generous support of the teachers, that will enable us to carry out our designs for the improvement of our educational organization.

On another page, we refer to some of the steps already taken to make the JOURNAL more interesting and valuable to all concerned in education. The editor cordially invites suggestions, contributions, and correspondence on all topics germane to the subject. We propose to enter on a year of unprecedented activity. And here we repeat our pledge that the benefit of the State aid shall be enjoyed by the schools of the State, to the improvement of the instruction therein given to the rising generation.

BUSINESS COMMUNICATIONS.

THE office and editorial rooms of the JOURNAL at 838 Market street have been improved, and better accommodations provided for all who have business with us and for teachers visiting the city. The latter are invited to make our rooms their headquarters: they will always be cordially welcomed; will find files of the eastern educational periodicals, magazines, and newspapers; and the means, as well, of forming the acquaintance of their co-laborers in city and country.

From this date, Mr. Myron H. Savage assumes the position of assistant editor and business manager of the JOURNAL. He is now engaged in balancing up the books and getting all accounts well straightened. Subscribers who owe for the year past or for the current year, will materially aid him by prompt remittance of amount due.

The particular attention of trustees and superintendents is called to the fact that Mr. Savage has established for his own profit and for their accommodation, an "Educational Bureau," the object being to supply schools with teachers. There is always a large list of applicants for positions at this office, many of them excellent teachers. There is no connection between the JOURNAL and this Bureau, but the editor will vouch for Mr. Savage's care in recommending no teachers for schools, except such as have the best credentials, both as regards moral character and ability to teach.

We will also state here that Mr. Savage's charge is but nominal, no more than is sufficient to repay the outlay for paper, postage, and time devoted to the necessary correspondence.

The Bureau is kept up by the desire of the editor, who finds it a means of frequently accommodating trustees and superintendents, and, at the same time, aiding many worthy and competent teachers.

PREMIUM ESSAYS.

THE editor of the JOURNAL desiring to aid in fostering the educational literature of this coast, calls the attention of teachers to the following list of subjects for a series of premium essays to be competed for during the coming ninety days.

CONDITIONS.—1st. The writer to be a subscriber to the JOURNAL.

2d. The MSS. to be sent to the office of the JOURNAL with a *nom de plume* attached.

3d. The name of the writer with his *nom de plume* to be sent in a sealed envelope to the editor, not to be opened until the award is made.

4th. All manuscripts submitted to become the property of the JOURNAL to be published or not at the option of the editor.

5th. No article to be longer than ten pages of the JOURNAL; and so arranged as to "cut up" into three or more papers.

6th. Writers may compete on one or all the subjects named.

SUBJECTS.—Following are the subjects selected:

1.—Moral Instruction in the Common Schools—How best accomplished.

2.—The Higher Education—Its Design—Scope.

3.—The Natural Sciences in the Common Schools—Their place—What should be taught—Methods.

4.—First Lessons in Numbers—Elementary Principles, how taught; Practical Arithmetic, of what it consists and how taught.

5.—Language Lessons for Beginners—Where should they begin—How to develop the idea of Language—How shall instruction be carried on—Instruction in Grammar, how.

COMPENSATION.—For each paper selected, by the committee hereinafter named, as being especially meritorious, the sum of twenty dollars will be paid.

COMMITTEE.—The following well-known educators have consented to act as a committee to examine the MSS. and designate those, in their judgment entitled to the premium. The task is by no means an easy or agreeable one. It involves at once the expenditure of considerable time, effort, and care. We here express our cordial thanks to these gentlemen for their material aid. Our best teachers everywhere should join us in appreciating their unselfish devotion in thus fostering the cause of educational progress.

The committee consists of professor Edward R. Sill of the University of California; Hon. Fred. M. Campbell, State Superintendent of Public Instruction; Prof. Charles H. Allen, principal of the State Normal School; Hon. John Swett, ex-State Superintendent of Public Instruction; W. T. Reid, principal of the San Francisco Boys' High School, and J. B. McChesney, principal of the Oakland High School.

THE NATIONAL EDUCATIONAL ASSOCIATION.

THE nineteenth annual meeting of the National Educational Association was held at Chautauqua, N. Y., July 13, 14, 15, and 16, and was an occasion long to be remembered by those fortunate enough to be in attendance. The papers by eminent educators were all on "live" subjects, of interest to the whole country. Though our space is limited, we can not refrain from naming a few of the speakers and their topics: There was Dr. A. D. Mayo of Mass. with a paper on Object Lessons; president E. E. White on Technical Training; Dr. J. M. Gregory on Technical Instruction in Land Grant Colleges; Supt. A. P. Marble on The Unattainable; Prof. W. H. Payne on Nature and Art in Education; Miss Grace C. Bibb on Normal Departments; J. C. Gilchrist on Didactics; G. L. Osborne on Normal School Work; G. P. Brown on Professional Obstructions; Charles Francis Adams jr. on Superintendency; G. J. Orr on Education of the Negro; J. W. Dickinson on Effects of Methods; W. T. Harris on Text-books and their Uses; Miss Hinman on The Use of Reference Books; E. O. Vaile on What should we Seek to Accomplish in the Reading Exercise; Miss Ellen Hyde on Character; Edward A. Singer on Practical Course of Study; W. N. Hailmann on The New Education; other speakers were Dr. McCosh of Princeton, F. A. March of Lafayette, Prof. Tappan of Kenyon, J. L. Pickard of State University of Iowa, who made able addresses.

It gave us deep regret to see this State utterly unrepresented. Why is it? In point of salary, certainly, our California teachers will not suffer by comparison with their Eastern brethren. Can they not afford this Eastern trip, or are they indifferent to the great educational movements of the day? Our State Association also is probably to blame in not electing delegates to represent the profession of this State.

Among the measures consummated, and of great value in our opinion, was the formation of a *National Council of Education*. The body consists of fifty-one members, and is a part of the National Association. The membership comprises the names of the most eminent educators from the various sections of the Union—*with not one name from California*. It is to be regretted that, at least

one or two of our teachers were not thought of. We believe there is one man in California, at all events, whose genius is felt not merely with us, but has reacted on the school systems of the Eastern States. Is it "out of sight, out of mind," with the educational leaders on the other side?

SPELLING REFORM.

THE suggestion made in the JOURNAL some time last year, that the press of California take up the spelling reform, and adopt the five rules prescribed by the American Spelling Reform Association, came up at the recent meeting of the Pacific Coast Press Association, and after considerable discussion was unanimously adopted. What will be the practical outcome of this action, we can not tell. We believe however that it is an advance which will prove the starting point to awaken more general attention to the subject, and finally result in the simplification of our system of spelling.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

THE following sent in circular form to superintendents and County Boards of Education, is equally applicable, in many respects, for the guidance of Boards of Trustees, and for the information of teachers. The points presented answer questions submitted, from many sources, for the decision of the State Superintendent.

TEACHERS' CERTIFICATES.

I hold that all teachers, no matter what other certificates or diplomas are held by them, should be required to obtain and hold while teaching, the certificates of the Boards of Education of their respective jurisdiction; *i. e.*, those teaching in cities and towns having Boards of Education, should hold the certificate of the City Board of Education, and those teaching outside the limits of such cities and towns, the certificate of their respective County Boards. Section 1775, Political Code, specifies the credentials upon which these local certificates can be granted without examination. The terms "Life Diplomas" and "Normal School Diplomas," as used in this section, include life diplomas and State Normal School Diplomas of other States, as well as those of California. (See Section 156, Political Code.)

The question is often asked what was the object and the effect of the Act concerning teachers' certificates, approved February 5th, 1880. It was passed, first, to bridge over the time until the school law could be matured and passed; and, second, the effect was to declare that the certificates named should be valid for the purposes designated afterwards in Section 1775.

It is also frequently asked, of what value State educational and life diplomas are, if it is necessary to hold, in addition thereto, the certificates of local Boards. The answer is

plain. County Boards have not the power to grant certificates upon those of other counties. Upon the conditions, however, specified in Section 1521, diplomas can be obtained upon them, and upon these in turn all local Boards may issue their certificates without examination. The question of allowing County Boards to grant certificates upon those of other counties was discussed quite fully by the Legislative Committees on Education, and the law was passed in its present form because it was foreseen that, on account of real or imaginary differences in the manner of conducting examinations and the standards required, discriminations would be made, leading to criminations, recriminations, and retaliations between the County Boards. The State diplomas were therefore made the medium of exchange between the counties, certifying as they do, not only to satisfactory examinations, but to not less than five or ten years of successful experience.

While Boards cannot issue certificates upon those of other counties, yet to provide against such contingencies as will readily suggest themselves as possible to arise between the regular meetings of the Board *for examination*, the power was given to Boards of Education to grant to the Superintendent, by a general order, the right (Section 1543, Subdivision sixth), to issue upon them *temporary* certificates, valid until the next regular meeting of the Board (*i. e.*, for examination of teachers.)

Concerning third grade certificates, I have decided that, while no more certificates of that grade can be issued originally, it is entirely competent for County Boards of Education, if they desire to do so, to recognize those already issued in their respective counties, and even to renew them upon expiration. I base this decision upon that portion of Section 1775, which gives to County Boards of Education the power to "renew certificates previously issued by them, or previously granted in their county." I further hold, that the Boards have power, if they shall desire to do so on account of special merit, long service, or marked success, to issue, *without examination*, to a holder of a third grade certificate, a second grade certificate thereon. Said Section 1775 specially provides that the Board may, without examination, grant county certificates *and fix the grade thereof*, to the holders of such State and county certificates as were in full force and effect on the first day of January, 1880."

I am quite as solicitous as any one can be to maintain a high standard of attainments for our teachers, but, among the holders of third grade certificates are many who are doing first class primary work; and I am sure that it was not the intention of the Legislature to subject such teachers to any greater or more unnecessary hardship than others of perhaps no greater ability, who were so fortunate as to hold a certificate one grade higher.

GRADING SCHOOLS.

I would suggest that the best way to grade your school at present, to conform to the new school law, and as likely to cause the least confusion, is to call all those GRAMMAR SCHOOLS which have hitherto been ranked as first grade schools, and all those PRIMARY SCHOOLS which have been known as second or third grade schools, subject to such individual exceptions or changes as may seem best.

COURSE OF STUDY.

One of the powers and duties of the State Board of Education is "to recommend the course of study in the Public Schools." It will be observed that the power of the State Board is only recommendatory; the question of final adoption lying with the County Boards.

The matter has received the serious attention and careful consideration of the committee of the State Board, to which it was referred, and the impossibility of at present preparing a course which shall commend itself for anything like general adoption, has been clearly demonstrated. This result was to be expected, in view of the recent changes in text-books in the different counties of the State (of the results of which changes the Board is in many cases still ignorant) and the consequent want of uniformity, the absence thus far of any opportunity of conference with the school authorities of the various sections of the State, and the lack, in short, of all necessary data.

I have, therefore, to recommend that each County Board at once prepare a course of study suited to the particular conditions, wants, text-books, and facilities in general, of the schools of its own jurisdiction; adding simply the one further suggestion, viz.: that it shall consist of two parts--the first for ungraded schools, and the second for graded schools. That a copy of the course of study be forwarded so soon as completed to this office. A list of the text-books adopted has already been called for. With all these before us, and the opportunities of conference afforded by the State Teachers' Association, and the convention of County Superintendents, it may be possible to evolve a course of study which we can confidently, or at least hopefully, recommend for general adoption.

DISTRICT LIBRARY BOOKS.

Another of the powers and duties of the State Board is "to recommend a list of books for District School Libraries." Here also the power of the State Board is merely recommendatory, the Boards of District School Trustees being the final arbiters as to how closely purchases for libraries shall conform to the recommended list, subject only to the restrictions expressed and implied in Sections 1712 and 1717 Political Code. The preparation of the list to be recommended is in the hands of a committee appointed for the purpose, and will be published so soon as it is completed. In the meantime correspondence, recommendations, and suggestions are respectfully solicited.

RULES FOR EXAMINATION OF TEACHERS.

The Board is also "to recommend rules for the examination of teachers." In this matter also the power of the State Board is but recommendatory, the power of adopting rules vesting in the County and City Boards of Education.

The recommendation is made that each Board of Education, that has not already done so, prepare for itself a set of rules for the examination of teachers, sending a copy to this office; that in the preparation of these rules those of the former State Board, so far as applicable, be taken as the basis.

It is recommended that extra credits be allowed to applicants for ascertained and proved successful experience as teachers; that the amount of such extra credits shall vary with the length and success of such experience, from 30 to 15 per cent. of the total amount of credits received in all the branches. It is further recommended that all applicants for first grade certificates be examined in English and American literature.

To the end that applicants may have some tangible means of preparation for examination in the "theory and practice of teaching," or "methods of teaching," and to assist Boards in conducting, within known, reasonable, and definite limits, examinations upon this subject, which, without some recognized guides, is "boundless as sea, impalpable as air," I shall recommend, as a standard or basis, the forthcoming book upon that subject, by the veteran teacher and superintendent, John Swett; provided, that in its completed form it fulfills the promise of the manuscript and the advance pages which I have seen.

RULES AND REGULATIONS GOVERNING PUBLIC SCHOOLS.

Another of the powers and duties of the State Board is "to adopt rules and regulations for the government of the Public Schools and District School Libraries." This has been done, and they have been printed, and, together with the School Law, are in the hands of the binder, and will soon be ready for distribution. The rules do not materially differ from those heretofore in force. Right here permit me to say a word by way of explanation: I am aware that no little inconvenience has been occasioned by your not receiving, as promptly as could be desired, some of the necessary blanks for transacting school business. So far, however, from there being any just cause for complaint, I desire to acknowledge our mutual obligations to Mr. J. D. Young, State Printer, and to Mr. Frank Foster, binder, for specially favoring our department. The work of all the departments of the State government is done here, including that of the public Boards and Commissions, and the public institutions, such as the University, Normal School, etc., and has been greatly increased this year, by reason of constitutional and legislative changes. That

required by this office alone has already amounted to more than one million four hundred thousand pages of printed matter, and four hundred and eighty thousand pages of blank forms, some of them very elaborate, including over twenty thousand bound books of blanks, and printed matter.

REAPPORTIONING ACCUMULATED FUNDS.

Section 1543, Subdivision first, provides for the reapportionment of "any money which has accumulated to the credit of a school district, by reason of a large census roll and small attendance."

This provision should be enforced by Superintendents with careful discrimination, so that, while it shall meet the cases of that class of districts for which it was intended, and correct the evident injustice which led to its incorporation in the law, it shall at the same time work no undeserved hardship or injustice to other districts. The attention of the Legislative Committee having the school law in hand, was called to the necessity of some such provision, by a representative and member of the committee, in whose county were several districts inhabited by a class of people who so little appreciated school privileges that while their district was quite populous, the school attendance was so small that large sums, in a number of cases amounting to from three to five thousand dollars, were accumulating from year to year to their credit, and remaining idle in the treasury, while the other enterprising and enlightened communities, in the same county, were obliged to resort to special taxation to maintain a school for the legal time.

LAPSING OF DISTRICTS.

Subdivision first of Section 1543, also provides that; "If, in any district, there shall be an average attendance for three months of only five pupils or less, such district shall lapse," etc. The wisdom of this provision must commend itself; for the tendency to cut up the counties into small districts, is one fraught with danger to our whole system, by reason of the unreasonably large per capita required to maintain them, and unless checked must soon result in a violent and dangerous reaction. While then this provision of the law should be rigidly enforced, yet if it shall clearly appear that the small attendance is the result of any of the visitations enumerated in Section 1859, it would be doing no violence to the spirit of the law to waive the penalty.

REQUISITIONS AND WARRANTS.

Why were Auditors made a part of the machinery in drawing school warrants?

Should requisitions and warrants be drawn unless the money is in the treasury to the credit of the district?

I answer the above questions, which, in various forms have been asked in more than a score of letters, as follows:

FIRST.—The provision requiring Auditors to draw all warrants was incorporated in the law at the request and upon the presentations of Auditors themselves, represented by the Auditor of Sacramento County, Mr. Wm. E. Gerber. He showed the Committees on Education, to their satisfaction, that while it would impose a great deal of additional labor upon Auditors, they desired it as a matter of protection and justice to themselves. That under the old law they were compelled to receipt to the Treasurers for warrants *after they had been paid*, which were drawn by some one else. That, as bookkeeper of the county, the Auditor is called upon by the County Examiners to state how much money should at any time, be in the hands of the Treasurer to the credit of each and all the funds. Under the old law he could do this with the exception of the School Fund, and it was claimed that no valid reason could be given why this fund should not be as safely guarded as the other funds belonging to the county; and the cases of some three or more counties in which school moneys had been "misappropriated" were cited as arguments why they should be equally protected. These and other arguments presented by Mr. Gerber led the committees to recommend the change, which was approved by the Legislature.

SECOND.—Subdivision second, of Section 1543, specifies the manner of drawing requisitions and warrants; and they are to be drawn *whether the money is in the treasury*

or not; provided, that the amount of the warrants drawn shall not exceed ninety per cent., etc. The question as to whether warrants should be drawn, there being no money in the funds, was very fully discussed in the committees, and the section was put in its present form with that special understanding. A reference to the corresponding section of the old School Law should remove all doubt upon this point. In that it was provided that no warrant should be drawn unless the money to pay it was in the treasury. In the new law that provision is repealed. The object had in view was to give the highest possible market value to scrip that has to be taken at certain times during the year by teachers and others. This, it was thought and believed, would be accomplished by making the last paper, that which draws the money, the negotiable paper instead, as heretofore, the orders of the Trustees. To give this paper a still higher market value, it was provided that it should show upon its face the condition of the funds that it was anticipating. It is only when there is no money in the treasury to the credit of a district that it is of the slightest importance for the warrants to show either the "estimated amount of the fund," or the "aggregated amount already drawn against it," and it is only when there are no funds that these blanks need be filled at all. I should add, that the Attorney-General fully agrees with me that the requisitions and warrants should be drawn as herein stated.

EIGHT MONTHS' SCHOOL.

Trustees are *compelled*, when there is sufficient money to the credit of a district to do so, to maintain an eight months' school, and the closing of the school for the year, until it has been maintained eight months that the money derived from the State and county may be used for any other purpose, is to defraud the children of the provision made for them during the year, and should not be allowed. Section 1621 is very clear on this point, and specifically provides that the only way in which the right to use any balance of State or county funds that may be to the credit of a district at the end of the year for the payment of outstanding claims, or for the year succeeding, is to have maintained a school for *eight months*. If a balance cannot be used for payment of old claims nor for those to be created in the future, it cannot be used at all. I have heretofore decided that all balances of State and county moneys, remaining on hand at the end of the year to the credit of a district which has failed to maintain an eight months' school, should be reapportioned among the districts of the county. And this is equity, too. If a district fail to maintain a *six* months school, whether the funds derived from the State or county are sufficient or not, it loses its entire next year's apportionment. It is but right that, if a district, having *sufficient* funds *furnished* to it for the purpose, fail to maintain an *eight* months' school, it should lose the benefit of any balance saved by such neglect of duty.

CONCLUSION.

This communication has already extended itself far beyond the limits at first proposed, and I shall therefore leave for a future communication the discussion of other questions of interest arising in the course of correspondence between this office and the local school officers and teachers of this State.

I shall be thankful if you will send to me as soon as published:

1. Your rules and regulations for the examination of teachers.
2. Your course of study.
3. The report of the proceedings of your meetings as they shall be published in your local paper.
4. The questions used at your last and each succeeding examination of teachers, together with the number of applicants, and the number who succeeded in obtaining each grade of certificate.

This, I am aware, is imposing considerable labor upon you, but in return it shall be my pleasure to act as the medium by which each of you shall have the benefit of the information communicated by all.

FRED. M. CAMPBELL,

Superintendent Public Instruction.

IN answer to questions regarding the position of County Superintendents on Boards of Education, and concerning compensation for services thereon rendered, I submit the following opinion of the Attorney-General :

OFFICE OF THE ATTORNEY-GENERAL,
OF THE STATE OF CALIFORNIA,
SACRAMENTO, JULY 17th, 1880. }

HON. FRED. M. CAMPBELL, *Supt. of Public Instruction* :

DEAR SIR : The Constitution does not provide that the School Superintendent shall be a member of the Board of Education ; but, on the contrary, provides for two different departments to be filled by different officers, and the act making the Superintendent *ex officio* a member of the Board operates to a certain extent as a consolidation of the duties of the two offices in the hands of one incumbent. As superintendent he acts in one capacity ; as member of the Board, he acts in an entirely different capacity. As superintendent he cannot be forced by law to act in the matters of adopting text-books, or granting certificates, except in counties where there are no County Boards of Education. (See Constitution, Sec. 7, Art. 9.)

His election to the office of Superintendent elects him also to the office of member of Board, and the duties which he performs as such member are no part of his duties as, and are not performed in the capacity of, superintendent. In this respect the case is not entirely unlike the case of *Love vs. Baehr*, 47 Cal. 364.

It results that the superintendent as a member of the Board of Education occupies the same position with reference to fees and emoluments that other members of the Board do, and that Section 1770 of the Political Code, as amended in 1880, which provides in effect, that the Board of Supervisors shall allow to the members of the Board of Education a reasonable compensation for their services, includes, in the designation, "Board of Education," the superintendent as well as other members of that Board.

I am, dear sir, yours respectfully ;

A. L. HART, Attorney-General.

STATE BOARD OF EDUCATION.

THE State Board of Education met, at the call of the State Superintendent, at the Capitol, Sacramento, July 13, 1880. Present—Governor Perkins, Supt. Campbell, and principal Allen—a full Board. Minutes of the preceding meeting read and approved. The following resolution was introduced by superintendent Campbell :

RESOLVED. That the PACIFIC SCHOOL AND HOME JOURNAL be and the same is hereby designated as the Official Organ of the Department of Public Instruction for the year ending June 30th, 1881, as provided in sub-division 13 of section 1521, Political Code, at an expense not to exceed \$1.25 per annum for each school district in the State.

After a brief discussion of the subject, the resolution was adopted.

The secretary on information and belief, preferred charges against a holder of a life diploma, and at his request, the matter was referred to a special committee, consisting of superintendent Campbell and professor Allen, to investigate and report after notifying the person to appear and show cause why the diploma should not be revoked.

State educational diplomas were then, on motion of professor Allen, granted Miss Ada Addis, Los Angeles; Mrs. M. C. Bagley, Solano; Mrs. Katie Brincan (nee Burns), Shasta; Oscar A. Baker, Los Angeles; Mrs. Mary V. Curtis (nee Woodson), Santa Clara; J. D. Collins, Fresno; Francis Cunningham, Tulare; Charles Converse, Mariposa; Mrs. Maggie E. Drew (nee Mahoney), Shasta; Miss Lou Dorsey, Nevada; John Dunsmore, Los Angeles;

W. D. Egenhoff; Mariposa; Charles E. Frázier, Ventura; James M. Gleaves, Shasta; B. A. Hawkins, Fresno; Miss Jennette Henderson, Nevada; Newman Jones, Mariposa; Wm. H. Leak, Sacramento; Miss Mary A. Leahy, Santa Clara; J. L. McClelland, Merced; H. H. McCutchan, Nevada; J. C. Nash, San Mateo; W. W. Poole, Fresno; W. H. Price, jr., Solano; Miss Mattie Patton, Santa Clara; Abbie E. Pratt, Sacramento; George C. Richards, Solano; Sadie L. Sears, San Mateo; Jesse M. Stewart, Tuolumne; Jos. Smith, Los Angeles; Marion P. Stone, Nevada; L. D. Stockton, San Benito; Lawton W. Valentine, Tehama; Mrs. Mary T. White, Merced; Miss Eliza P. Welch, Shasta; Mrs. M. J. Worthen, San Mateo; Mrs. Nellie M. Post, Sacramento; Miss Maggie Todd, Tulare.

Life diplomas were issued to the following named persons: Emma H. Beane, Napa; Miss Kate Driscoll, Solano; Wm. T. Dean, Tulare; W. H. Edwards, San Francisco; Frank W. Emerson, Sutter; D. A. Fassett, Tulare; J. P. Le Fevre, Plumas; Mrs. Marie D. Hartley, Calaveras; William B. Howard, Stanislaus; Geo. P. Manly, Tulare; Geo. W. Pleasants, Modoc; Mrs. M. E. Shekels, Butte; Jos. H. Wells, Calaveras; George W. Worthen, San Mateo.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

MR. E. WHYMPER, the traveler, has been climbing some of the mountains of South America. In a letter to a friend as published in the *London Times* he says:—"You will be pleased to hear that I have been polishing off Chimborazo, Corozon, Sincholagua, and Antisana. We have also passed twenty-six consecutive hours on the top of Cotopaxi. This last I reckon a feat, and I am not aware that any one has ever before encamped at so great an altitude as 19,500 feet. We have grown out of being affected by rarefaction of the air and can be quite gay and lively at 19,500 feet.

In a recent number of the *Eureka Leader* it is stated that "where at one time was Ruby Lake, there is at present not a drop of water. This sheet of water, seven or eight years ago, was from eighteen to twenty miles in length, and varied in breadth from half a mile to two or three miles, and was in a number of places very deep. It was fed by numberless springs along the foot of Ruby Mountain, and was the largest body of water in eastern Nevada. For a number of years past it has been gradually drying up, until at last it has entirely disappeared. What has been the cause of this, is a mystery. The Ruby range of mountains is considered the largest and finest between the Rockies and the Sierra Nevadas, and besides being well wooded, has been the best-watered range of mountains in Nevada.

The work of examining the 5,000 *employees* of the Pennsylvania Railroad Company as to their power of distinguishing colors and forms was begun in Jersey City on April 1. Acuteness of vision was tested by means of printed cards placed at a distance of twenty feet; also by small openings in a screen illuminated on the further side. Many who successfully passed these ordeals failed signally in the color tests. Three skeins of woolen yarn were used, one being light green, the second rose, the third red. Each of these was placed on a table in front of the person examined, at a distance of three feet, and, with the vision of either eye obstructed by a spectacle frame, the man was requested to name the colors, also to pick out a similar shade to one or other of the three specified from different skeins of woolen yarn numbered from one to thirty-six. One young man

correctly designated the test skein as red, but on being told to select a similar shade from the skeins before him, he picked three shades of blue, two of yellow, and one of red. He could distinguish no difference; the same thing happened to half-a-dozen others who followed him. The skeins in the row were then divided into three sets with twelve number in each. Some men proved able to distinguish all the shades of green, but failed lamentably in picking out the different shades of red. The officers of the road were greatly impressed, it is said, by the results obtained.

A HIGH and well-deserved compliment has been paid to the United States Signal Service, of whose services to meteorology our readers are so well aware. The German Government recently addressed through the German minister at Washington, a letter requesting to be exactly informed as to the processes by which the Signal Service Bureau so promptly collects at the War Department the meteorological reports from all parts of the United States—an extent of territory greater than Europe—and so rapidly drafts and publishes them upon the printed daily weather-maps. These maps are issued three hours after the records are read at the distant stations. When it is remembered that the request comes from a government noted for its skilled chartographers, and standing first in Europe, the value of the compliment will be appreciated. It is understood that the German Government proposes an advance in meteorological work. The information sought has been minutely prepared by the Chief Signal Officer, Gen. Myer, with the approval of the Secretary of War.

HERR KOCI and Fr. Klocke have made some exceedingly interesting measurements of the motion of the Morteratsch glacier. By the use of telescopes with suitably arranged cross-wires they have determined that the ice-mass not only resembles a river in having an onward flow, but that the resemblance extends to details; that is, that two points separated by a distance of fifty to sixty metres may move in opposite directions, that at one locality the motion is vertically downward while at another it is upward, thus showing that in connection with the general flow down the valley there are eddies and currents as in a river.

THE PLANETS IN AUGUST.—*Mercury* is an evening star rising on the 7th at about sunrise; on the 15th about 1 h. 35 m. before the sun and on the 25th about 1 h. 35 m; after this the time gradually diminishes during the month. He is near the moon on the 5th and stationary among the stars on the 6th. *Venus* is an evening star setting on the 8th at 7 h. and 26 m. P. M., or 22 m. after sunset. This interval gradually increases during the month to half an hour. She is near the moon on the 6th. *Mars* is an evening star setting on the 8th at 7 h. 57 m. P. M.; on the 18th at 7 h. 37 m. P. M., and on the 28th at 7 h. 13 m. P. M. He is near the moon on the 8th. *Jupiter* rises on the 7th at 10 h. 1 m. P. M.; on the 17th at 9 h. 16 m. P. M., and on the 27th at 8 h. 36 m. P. M. He is stationary among the stars *i. e.* commences his apparent retrograde motion on the 9th, and near the moon on the 24th. *Saturn* rises on the 7th at 10 h. 26 m. P. M.; on the 17th at 9 h. 41 m. P. M., and on the 27th at 8 h. 55 m. P. M. He is stationary among the stars on the 11th, and near the moon on the 24th. Jupiter has an apparent retrograde motion until Dec. 4th, and Saturn until Dec. 25th.

THE MISSING (TELEGRAPHIC) LINK.—To complete the girdle of telegraphic lines around the world, a line is needed from some point on the Pacific coast to the Sandwich Islands, and thence to Japan and China. Mr. Cyrus W. Field is said to have obtained important governmental concessions in connection with projected lines.

THE ST. GOTHARD TUNNEL.—It is in contemplation by the directors of the St. Gothard Tunnel to work the traffic through the tunnel by electricity. Plans and designs for powerful dynamo-electric motors are already in hand. The abundant water-power generally to be found in the vicinity of such tunnels, would, most probably, render the application of electricity as a motor power comparatively cheap.

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

It has been well suggested by some that feel an interest in this department that more attention should be given to arithmetical methods and solutions. All contributions of this nature will be gratefully received, and, if possible, published. We offer in the first contribution, nothing new or original, a method of calculating interest, which is used to a limited extent by business men.

A 6 per cent. method of calculating interest.

As the interest, at six per cent., of \$1 for 2 months is 1 per cent., the interest of any principal at the same rate and the same time is one hundredth of that principal. The interest for 20 months is one tenth, the interest for 200 months is the principal itself, the interest for 6 days is one thousandth of the principal. The interest then for any one of these periods may be at once determined by merely fixing the position of the decimal point. The interest for an aliquot part of a period may be easily calculated. Such are the principles on which the method is based. Their application may best be illustrated by an example.

Find the interest, at 6 per cent., of \$342.51 for 27 mo. 14 da.

$$\begin{array}{r}
 \underline{\$342.51} \\
 34.251 \text{ Int. for 20 mos.} \\
 8.5628 \text{ " " 5 " } \left(\frac{1}{4} \text{ of } 20\right) \\
 3.425 \text{ " " 2 " } \\
 .3425 \text{ " " 6 da.} \\
 .3425 \text{ " " 6 " } \\
 \underline{\underline{.1142 \text{ " " 2 " } \left(\frac{1}{3} \text{ of } 6\right)}} \\
 \$47.0380 \text{ " " 27 mo. 14 da.}
 \end{array}$$

PROBLEM 32—

To divide 8-5 into two fractions such that the sum of their numerators shall be equal to the sum of their denominators.

The above problem has been handed to us by an old teacher who has solved it but is not satisfied with his solution. He finds it impossible to state as many equations as there appear to be unknown quantities. Will our readers kindly exercise their talents upon the question and favor us with solutions? We shall take pleasure in publishing the most interesting of these in our next.

MR. C. B. TOWLE of Vallejo writes as follows: The following operation, not given, I think, in our text-books, is suggested as an easy method of solving some troublesome examples in quadratics.

Given (1) $2x^2 + 5y^2 = 77$, and (2) $5xy - x^2 = 44$, to find the values of x and y .

Multiplying (1) by 6, and (2) by 7, we have (3) $8x^2 + 20y^2 = 308$, and (4) $35xy - 7x^2 = 308$.

Putting the first members equal to each other,

$$(5) \quad 8x^2 + 20y^2 = 35xy - 7x^2$$

$$(6) \quad 15x^2 - 35xy = -20y^2$$

$$(7) \quad 3x^2 - 7xy = -4y^2$$

$$(8) \quad 36x^2 - () + 49y^2 = y^2$$

$$(9) \quad 6x - 7y = \pm y$$

$$(10) \quad 6x = 8y, \text{ or } 6y$$

$$(11) \quad x = \frac{4}{3}y, \text{ or } y.$$

Substituting (11) in (1) $\frac{8}{9}y^2 + 5y^2 = 77$

From which, $y = \pm 3$, and $x = \pm 4$.

Or using the second value of x in y ,

$$y = \sqrt{11}, \text{ and } x = \sqrt{11}.$$

The following examples are given to explain a process by which binomials can be raised to any power, the process being a simplification of that given in our text-books.

Raise $(a^3 + b^2)$ to the fourth power.

First write four fractions, $\frac{4}{1}, \frac{3}{2}, \frac{2}{3}, \frac{1}{4}$.

Raise a^3 to the required power for the first term in the power. Then the coefficient of the first term multiplied by the first fraction, $\frac{4}{1}$, gives the coefficient of the second term. The coefficient of the second term multiplied by the second fraction, $\frac{3}{2}$, gives the coefficient of the third term; and so on to the last.

It is not necessary to use any exponents, or to consider what the number of the term will be.

The work when written will appear as follows :

$$a^{12} + 4a^9b^2 + 6a^6b^4 + 4a^3b^6 + b^8$$

$$1 \times \frac{4}{1} = 4. \quad 4 \times \frac{3}{2} = 6. \quad 6 \times \frac{2}{3} = 4. \quad 4 \times \frac{1}{4} = 1.$$

Raise $(2a^3 + 3b^2)$ to the fourth power.

Besides the work in the first example, it is only necessary to use a fraction consisting of the coefficient of the second term for a numerator, and that of the first term for a denominator, this fraction to be taken as a multiplier every time.

The work of this example will appear as follows: $\frac{4}{1}, \frac{3}{2}, \frac{2}{3}, \frac{1}{4}, (\frac{3}{2})$

$$16a^{12} + 96a^9b^2 + 216a^6b^4 + 216a^3b^6 + 81b^8$$

$$16 \times \frac{4}{1} \times \frac{3}{2} = 96. \quad 96 \times \frac{3}{2} \times \frac{2}{3} = 216. \quad 216 \times \frac{2}{3} \times \frac{3}{2} = 216.$$

$$216 \times \frac{1}{4} \times \frac{3}{2} = 81.$$

*BOOKS RECEIVED.

FROM PAYOT, UPHAM & CO.

- THE THEORY OF THOUGHT.—*Noah K. Davis.* Harper & Bros.
 STUDIES FROM THE GREEK POETS.—2 vols. *John Addington Symonds.* Harper & Bros.
 SHAKESPEARE'S COMEDY OF THE WINTER'S TALE.—*Edited by W. J. Rolfe, A. M.* Harper & Bros.
 SHAKESPEARE'S HENRY IV.—Parts I and II. *Edited by W. J. Rolfe, A. M.* Harper & Bros.
 ENGLISH MEN OF LETTERS—MILTON. *Edited by Mark Pattison.* Harper & Bros.
 THE PHEACIAN EPISODE OF THE ODYSSEY.—*A. C. Merriam.* Harper & Bros.
 CHAPTERS FROM THE PHYSICAL FEATURES OF THE EARTH—*Arthur Nichols.* Harper & Bros.
 THE STUDENT'S HOME.—*Edited by J. S. Brewer, M. A.* Harper & Bros.
 AN INVOLUNTARY VOYAGE.—*Lucian Biart.* Harper & Bros.

FROM BILLINGS, HARBOURNE & CO.

- AMERICAN PROSE.—*By the Author of American Poems.* Houghton, Osgood & Co.
 YOUNG FOLKS' BOOK OF POETRY.—*Edited by Loomis J. Campbell.* Lee & Shepard.
 EVERY DAY ENGLISH.—*Richard Grant White.* Houghton, Mifflin & Co.
 MAN PROPOSES.—A Novel. Lee & Shepard.
 BALLADS AND LYRICS.—*Edited by Harry Cabot Lodge.* Houghton, Mifflin & Co.
 EASTWARD HO! A Story for Boys.—*C. A. T. Farrar.* Lee & Shepard.

FROM A. L. BANCROFT & CO.

- SOME THOUGHTS CONCERNING EDUCATION (90 cts.).—*John Locke.* University Press.
 AN ELEMENTARY TEXT BOOK OF BOTANY.—*D. K. Franck.* J. B. Lippincott & Co.
 MASTERPIECES OF ENGLISH LITERATURE.—*William Swinton.* Harper & Bros.

NEWS RECORD.

OUR record closes on July 24th.

Foreign and Domestic.

The British have commenced to retire from Cabul.

The population of Brooklyn is now said to be 567,000.

The Egyptian obelisk is to be erected in Central Park, New York. It has arrived in the harbor.

The issue of postage stamps, stamped envelopes, and postal cards by the Postoffice Department for the fiscal year ending June 30th amounted to \$32,000,000.

The Chilean fleet has notified the Peruvian authorities that Lima will be bombarded if peace is not soon made.

The French national fete was celebrated at various points on the coast July 14th, notably at San Francisco.

The Canton Schweiz, Switzerland, has re-established capital punishment.

It begins to look now as though war between Turkey and Greece is almost certain.

The English in Afghanistan, under Gen. Burrows, numbering 2700 men, were attacked two weeks ago, by a large force of

*The receipt of books is acknowledged in one number of the JOURNAL; and a review follows in as early an issue succeeding as possible. It is proposed to publish, hereafter, the price of each book at the time the notice of receipt is published. Publishers will accordingly confer a favor on us by giving the price of each book with the volume itself,

Afghans, and utterly defeated. Reinforcements are being hurried forward from England and India.

Earthquakes of considerable severity are reported at Geneva, Switzerland, and at St. George, one of the Azores. The Swiss commotion took the crest off one of the mountains.

An earthquake recently at the Island of St. George, one of the Azores group, resulted in the formation of another island, six hundred yards distant, about 18,000 yards in extent.

Personal.

Prof. Edward R. Sill of the State University, Dr. McLean of the Congregational Church Oakland, and principal McChesney spent two or three weeks in June trout-fishing in the head waters of the McCloud and Sacramento rivers, climbing Mt. Shasta, and mountaineering among the neighboring peaks.

Among the well-known Americans who died last month, was George Merriam, the senior member of the firm of G. & C. Merriam, of Springfield, Mass. It is owing to the business enterprise and integrity of this firm that Webster's Dictionaries were first brought into general use, and were from time to time revised, until now the unabridged is the standard for the English language in two hemispheres.

Mrs. Fletcher Webster is rebuilding the house at Marshfield, although not in the same manner. The old elm, so loved by her father-in-law, was not destroyed by the fire.

American literature has lost, in the death of Mr. George Ripley, an eminent scholar and a friendly critic, whose place will not soon be filled. He was born in Greenfield, Mass., October 3, 1802; graduated at Harvard in 1823, and at the Cambridge Divinity School three years later; was mathematical tutor in the university a year, and then was settled for a few years over a church in Boston. He spent some years abroad, in the study of French and German literature, and in 1849 began his labors as literary editor of the New York *Tribune*, continuing in that service until his death.—*Harper's Bazar*.

It has been known for some time that the grand prize of honor for the best collective exhibit at the International Fishery Exhibition at Berlin was bestowed upon professor Spencer F. Baird, United States Commissioner of Fish and Fisheries. America has also secured ten gold medals, twenty silver medals, fourteen bronze ones, and sixteen honorary diplomas.

Captain James B. Eads is in our country what De Lesseps is in Europe. He is recognized as among the most successful managers of great engineering works of the age. He is now visiting this State partly for pleasure, and in part to consult with California engineers on the debris problem.

The British royal family and the King of the Hellenes go picnicking just as plain people do. At Virginia Water recently the Prince of Wales rowed two ladies; the princess and the duchess of Teck went out in a gig; the duchess of Connaught had a water velocipede propelled by the duke of Teck, and all the royal children paddled about until sunset.

General Sutter the discoverer of gold in California, recently died, in the seventy-eight year of his age, having been born in Switzerland, in 1802. He was a classmate of Louis Napoleon, afterward the Emperor of France.

The teachers of California, especially those who are proud of the honor of having once been his pupils, will be pleased to hear that the San Francisco Board of Education have elected Prof. George W. Minns to a position as teacher of Natural Sciences in the Girls' High School of this city. Mr. Minns will probably assist Prof. Rattan, who has more classes and pupils than one teacher can well attend to. We cordially welcome Prof. Minns back among us once more; and we trust he will remain with us till

"Death says
The school is dismissed."

Mr. F. G. Sanborn, who was the chief representative of A. L. Bancroft & Co. in the recent text-book fight in this State, assumes charge of the Educational department of that house. Mr. Sanborn is an affable, intelligent gentleman; and his appointment will undoubtedly redound greatly to the advantage of the house.

Secretary of the Interior Carl Schurz made two speeches in San Francisco, both of which may be characterized as masterly efforts. He visited the Yosemite, and returned East.

A private letter from Prof. Young, of Gold Hill, dated at Chautauqua, N. Y., July 13th, states that he left Prof. Baker, of Virginia City, at Chicago. He speaks in glowing terms of Chautauqua as a resort for teachers. About 10,000 people were there enjoying the pleasures of lake and grove. From all parts of the Union have come to the assembly the most distinguished educators: Wilson of Washington, D. C., J. B. Wickersham, Chas. Francis Adams, Jr., Col. Parker, of Quincy, and many others, whose names are familiar as instructors. Mrs. Swift, of the Virginia

City High School, was also there, and the sessions of the institute were of the greatest interest.

Prest. Hayes has accepted an invitation to visit our State Fair next Fall. He will be the first President to visit this coast.

Chas. Crocker, Prest. of the S. P. R. R., thinks his road will make connection with the A. T. and Sta. F. line by next Christmas.

Educational.

By unanimous vote the trustees of Hanover College, the oldest in the State of Indiana, have decided to admit young women on the same terms as young men. The institution is under Presbyterian control, and it is nearly the last of the fifteen Protestant colleges of the State to accept co-education.

J. M. Gregory has tendered his resignation as president of the Industrial University of Illinois. Dr. Gregory is one of the ablest men in the country.

Mr. E. H. Long has been elected superintendent of the St. Louis schools, to take the place of W. T. Harris, resigned. Mr. Long was assistant superintendent.

The *Educational Weekly* of Chicago, has again changed its editorial management. Jeremiah Mahony, editor in chief, retires, and W. H. Payne, the Professor of Pedagogics in the State of Michigan, takes his place. Mahony is an able writer, and his articles are always readable.

Rome spends \$200,000 on her free public schools, of which a few years ago, under Papal rule, she had none at all. The Romans now evince great alacrity in attending the schools, and the latter are entirely inadequate to the demand of the population.

Prof. J. H. Smart has been appointed one of the members of the United States International Exhibition Commissioners for the Exhibition to be held in New York in 1883. Mr. Smart may have the opportunity of performing the same service for the school interests of the country which he performed for Indiana in 1876. Prof. Smart has been State superintendent of Indiana three terms, and only failed of renomination and reelection because his party could not reconcile themselves to a fourth term, though on account of his high rank as an educator and his general popularity, they were compelled to give him a third term.

Geo. P. Howland, the new superintendent of the Chicago schools, has been principal of the Chicago High School for twenty-three years. He is a ripe scholar and a most accomplished gentleman. An excellent metrical translation of the Iliad from his pen

was recently completed in the *Chicago Weekly*.

The Chicago School Board met June 25th to elect a superintendent and transact other business. Up to the meeting of the board it was not known, even to Mr. Doty, that there was any serious opposition in the board to his re-election. When the board was ready to proceed with the election a member nominated Mr. Doty; another nominated Geo. P. Howland, principal of the high school. When the vote was counted out it was discovered that Mr. Doty had but four votes, while Mr. Howland had nine. This came like a clap of thunder from a clear sky, and shocked not only Mr. Doty and his friends, but the public. Mr. Doty would have a great deal of sympathy from educators generally throughout the country, being thus summarily dismissed, were it not for the fact that it is generally understood that he secured his place by conniving with the worse element of the board to crowd out Mr. Pickard, his predecessor, one of the ablest educators in the Union. Mr. Doty's removal may partly be ascribed to the active attacks of the *Educational Weekly*, and its incessant and pungent criticisms on his official career.

H. S. Tarbell has been re-elected superintendent of the Indianapolis schools, and his salary increased from \$2,500 to \$3,000. This is substantial endorsement of Mr. Tarbell's work in his new position.

Purdue University is the youngest college in Indiana, and yet the richest. It has an invested *productive* endowment fund of \$338,000. It was opened in 1872, and has been growing each year. Its success under president E. E. White who has an unsurpassed record as an able educator, may be considered assured.

John Hancock has been re-elected superintendent of the Dayton, Ohio, schools.

The students of Yale have commenced a movement to secure grounds for athletic exercises. A committee has been appointed, and has reported in favor of immediate purchase, recommending the field near the corner of Winthrop avenue and Goffe street, and suggesting that collectors be appointed to solicit money from students, graduates, and friends.

The Summer School of Zoology of the John Hopkins University is established on an island near the mouth of Chesapeake Bay, for a term of six weeks. The place abounds in living organisms in such variety that the student has an opportunity of studying representatives of nearly all the larger groups of animals, and is free from mosquitoes and extreme heat.

Supt. Lucky, Pittsburg, requires spelling

to be taught in connection with other school branches, not from spelling-books. The plan has been tried for several years and proves a marked success.

The time has come when it should be universally believed that spelling can not be taught through the ear. It is wrong to put misspelled words before the eyes of learners for any purpose whatever.—*Barnes' Monthly*.

He who does not teach history with geography is not teaching as he ought. A geography that has not history interspersed in its pages is not a good book for the school-room.—*Barnes' Monthly*.

There is only one country in the world in which there are no illiterate people; it is the Sandwich Islands. The population of the islands is 58,000. They have eleven high educational institutions, one hundred sixty-nine middle public schools, and forty-three private schools. The public instruction is under the supervision of a committee appointed by the king, and composed of five members, who serve without a remuneration; the committee appoint a general inspector and a number of sub-inspectors. The government takes care that every person shall be able to read and write, and pursues energetically all parents who neglect to send their children to school.

Madagascar has a Normal school which was opened in October last, under the presidency of the Prime Minister. It is situated at Antananarivo, and is in connection with the London Missionary Society. According to recent reports there are in Madagascar 159 schools, with 9,375 children, supported by the government, and in connection with the London Missionary Society 657 schools and 37,412 children. The government teachers are trained in the Normal school.

The nations having compulsory educational laws are as follows: Prussia, since 1732; all the German States, before 1810; Austria, in a modified form, for a hundred years; the Scandinavian Government and Denmark, since 1814; Greece, since 1834; all the cantons of Switzerland except Geneva; Turkey since 1869, but the laws have not been enforced; Italy since 1871; Spain and Portugal, but the laws are not enforced. The school boards of England have had the power to compel attendance since 1871; and the cities of Liverpool, Manchester, Oxford and many other towns have compulsory laws.

The per cent. of population of different nations that can read and write is as follows, viz: Switzerland, 100; Denmark, 100; Sweden, 100; Norway, 100; Japan, 90; Germany, 88; United States, 80; Belgium, 70; England, 67; France, 67; Austria, 51; China,

50; Italy, 27; Spain 20; Greece, 18; Argentine Republic, 17; Russia, 9; Poland, 9; Mexico, 7; India, 5.

States that have compulsory educational laws are as follows, viz.: Maine, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Michigan, Nevada, Texas. In most, if not all, of these States the law is practically inoperative.

Educational matters in British Columbia, under the efficient supervision of the chief superintendent C. C. McKenzie, are progressing very favorably. A new School Act has been passed giving trustees more power, and establishing more intimate relations between the teachers and the chief superintendent. The Council of Education has ceased to exist. There are in all 58 teachers and 2,301 registered pupils. The highest salary paid is \$110 per month, and the lowest \$45. The average salary is \$61 per month.

The Common Council of the city of London (Eng.) is about to establish a school of music, to give thorough musical instruction at a moderate cost. In this connection it may be mentioned that there are in Great Britain and Ireland about 11,000 persons who obtain a livelihood by teaching music. Of these about 4,000 are in the metropolis.—*Canada Journal*.

The laws of Nevada require all children between the ages of eight and fourteen to attend some school, or to be taught at home for a period of sixteen weeks each year, unless they reside too far away from any school (two miles) or are otherwise exempt; and the trustees are the only persons to decide on applications for excuses from the operation of the law. The census marshals are required to report delinquent parties and the penalty for non-compliance with the law is a fine to parents or guardians of from \$50 to \$100 and costs for the first offense, and a double fine for each subsequent offense. There are 1191 children in Virginia City, 992 at public schools, 149 at private schools, and 50 at none. In Gold Hill 572 children, at public schools 517, at private schools 34, at none 20.

A very gratifying feature connected with the opening of the new Free Public Library of S. F. is the large attendance on the part of boys from 10 to 15 years of age. The managers inform us that of the 1000 daily visitors, over 200 are lads of that interesting and important period of life.

Professor Palmieri claims that by registering the vibrations of the earth with the seismograph, in regions liable to earthquake, the approach of those disturbers can be as easily foretold as any atmospheric storm.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SAN FRANCISCO COUNTY.

A decided change has come over the San Francisco Board of Education. Its administration of the schools began as an autocracy, and for more than six months, the department has been under a "reign of terror." Within our experience of thirteen years, we know of no period where so little enthusiastic work has been accomplished; or where there has been such a total lack of harmony between teachers and the Board as since last December. Now, thanks to the bold, manly measures taken by superintendent Taylor, director Van Schaick, and a majority of the members, the rule of ignorance and obstinacy has been broken. Those two or three members, who for six months have run the department, have demonstrated to the satisfaction of their colleagues, as well as to the intelligent public, that it requires some degree of culture and, at least, a slight acquaintance with school affairs, to manage successfully all the details of a school organization so large as that of San Francisco. Superintendent Taylor said of the Chairman of the Classification Committee, who has been a veritable "bull in a china shop," that he did not doubt the gentleman's integrity, but it was evident the Almighty had not deemed it fit to endow him with sufficient intelligence or ability to perform the onerous duties of the head of so important a committee to the advantage of the schools. As affairs now stand, director Van Schaik and Superintendent Taylor have the majority of the Board heartily in accord with them. If matters remain in this state, we predict a revolution of sentiment among the teachers and general public. The Board, which, with the exception of a few members, was held in universal execration, will commend itself to the good-will and affection of all. Let us trust it will be so.

Mr. Lezynsky has been elected special teacher of bookkeeping in the high schools

and the first grades. Mr. Lezynsky has taught bookkeeping in the evening schools for six or seven years, with great success.

We see that teachers as well as other workers in this city, are thoroughly aroused to the necessity of defeating the new Charter. It is not too much to say that that instrument is so framed as purely to benefit the monied classes. There are undoubtedly many good points in the document; but the gist of it all is to lower taxation, even, if by so doing the best interests of the people are sacrificed. In this new Charter the school department is reduced, nay, pinched and mulcted, out of all proportion with the other departments of the city government. We hope teachers will not be remiss in working to secure its defeat.

Messrs. Gerhard Schoof and Hubert Burgess were again elected, a few weeks ago, into the department as teachers of drawing. Our readers will remember that the four special teachers of drawing were dismissed about three months since, and an attempt made to have the regular teachers instruct their classes in that branch. The Board at last concluded, that even with the most faithful and competent corps of teachers, supervision is necessary in a special branch. Hence their wise action in electing Messrs. Schoof and Burgess, who have uniformly distinguished themselves for a thorough knowledge of their specialty and success as teachers.

An attempt was made at the last meeting of the Board to elect special teachers of music, but without success. Mr. Washington Elliot, a veteran in the department will undoubtedly be elected at an early day. Another gentleman, who deserves consideration at the hands of the Board, is Mr. W. E. Price. This gentleman is one of the most accomplished teachers of music we have ever had the pleasure to meet. Of magnetic manners, he endears himself and his subject to his classes, and awakens a rare

enthusiasm wherever he goes. The Board will certainly do itself credit, and confer a lasting benefit on the schools by putting him back in his old position.

Another wise act of the Board, or rather the rescinding of an unwise one, was the repeal of the resolution compelling principals having but eight classes, to teach a class. This resolution struck at the root of all efficient supervision. The originator evidently believed that a principal could be in two places at the same time. At all events, the resolution has now been revoked, and every competent principal will rejoice.

At the recent examination in this city, 279 persons applied for certificates. The number granted was 100, of which 18 were first grade, and 82 second grade.

On the first of August the Traylor Act had not been decided—four months since the teachers have been paid. The Supreme Court have ordered the case reargued before them in Bank.

BUTTE COUNTY.

Mr. F. A. Peachy has been elected principal of the Oroville school. Mr. Peachy is well known in Butte county, and wherever he has taught has established a high reputation as a teacher and gentleman.

Mr. N. B. Coffman was elected vice-principal of Oroville school July 10th, and principal of grammar department, Chico, the 12th. We have not learned which position he will accept.

Miss Louise Hibbard who was for several years connected with the Chico schools, and has been visiting in the New England States the past year, will shortly return to the coast and teach in the Biggs school—intermediate department.

CONTRA COSTA COUNTY.

The Martinez public school opened July 31, and a new 700 lb. bell called the young ideas together. Mr. C. H. Clement—whose narrow escape from the antlers of a deer in Santa Clara county, is fresh in the minds of our readers—has been engaged as principal.

HUMBOLDT COUNTY.

Wallace Dinsmore, who graduated in the last class at the State University will teach at Elk River, the ensuing year.

Thirteen candidates were successful in the recent examinations at Eureka. They all received second grade certificates.

Mr. Frank N. Claybourn is assisting Prof. Fablinger at Rohnerville. He is a wide-awake, practical teacher, and together they will make a strong team.

L. F. McGee of San Joaquin county—formerly of Mich.—will teach in Dinsmore district, Humboldt county.

P. S. Inskip teaches at Port Kenyon next year.

LOS ANGELES COUNTY.

Prof. C. H. Kimball has resigned the superintendency of the Los Angeles city schools. He has been a very efficient officer, and the schools have prospered under his administration.

By the last census Los Angeles city has 2612 children between five and seventeen years. 1522 attended public schools, 385 private schools, and 1289 no school.

At the recent examination at Los Angeles Miss Sara C. Reese, Miss Alice P. Adams, and Miss Nettie Getchell received first grade certificates, and Miss Eva M. Holt received a second grade certificate.

Anaheim has a new \$13,000 school house.

MENDOCINO COUNTY.

The Mendocino city schools opened July 19th with 87 pupils in two departments,

Mr. Higshead will teach in Sylvan district, Mr. Dashiell in Little Lake, Mr. Pemberton at Sawyer's, and Mr. Young at Willet's.

MONO COUNTY.

The Bodie public school opened 20th ult. with 175 scholars. Principal, Mr. Foss, first assistant, Mrs. Belle Donelley. Primary department—Miss Flavin and Mr. Hayden.

MARIN COUNTY.

Supt. Augustine has prepared a manual for the use of the teachers of his county, which is worthy the notice of superintendents and Boards of Education. It comprises a course of study, with practical directions to teachers in regard to methods etc. The style of the San Francisco manual is followed, but Mr. Augustine's ideas

and suggestions are in many instances original and superior.

NEVADA COUNTY.

George Riley, a progressive and enterprising teacher, is in charge of the Mooney Flat school.

Prof. M. B. B. Potter one of the oldest and most successful teachers in Nevada Co., and a member of the Board of Education will "sprout the young idea" no longer. He is going into the grocery business at Nevada City.

Mrs. Ryder's Grass Valley Seminary begins its Fall term Aug. 2.

Carl Muller is teaching at Pike Flat.

Following is the corps of teachers of the Nevada city schools: N. Kennedy, S. A. Bulfinch, E. O'Neill, Miss M. Hemmenway, Miss S. C. Nilton, Miss Mary Finney, Miss Eva Hough, Miss Belle Cooper, Miss Tillie Lisson, Miss Sophia Lawson.

Mrs. J. A. De Grayer has assumed charge of the Nevada City Kindergarten recently conducted by Miss Shea.

SACRAMENTO COUNTY.

Sacramento city enjoyed the luxury of a school investigation during the greater part of the month of June. It appears that Prof. A. H. McDonald was accused by some one, (it is difficult to tell by whom, though the parent of one of his pupils was *ostensibly* the accuser) of incompetency, because his first grade failed to pass an examination on one of the most idiotic set of arithmetic papers ever concocted by the perverted ingenuity of man. A great deal of remarkable testimony was listened to from parents and children for and against Mr. McDonald's competency. The Board finally concluded the matter by voting Mr. McDonald competent, and electing another man to the position he has held for eleven years. By this action the Board has certainly stultified itself, for if competent, he was entitled to reelection, if incompetent they should have said so. To our own personal knowledge, Mr. McDonald is a good scholar and one of the best principals in the State.

YOLO COUNTY.

Woodland schools are taught by principal H. M. Goin, vice-principal J. I. McConnell,

Mrs. Grant, Miss Kate Fisher, Miss S. Miller, Miss Mary Lasley, Miss Maggie Kean, and Mrs. T. J. Dexter.

LITERARY NOTES.

The August *Harper* has the following articles of special interest: Robert Burns (poem), by Henry W. Longfellow; Fish and Men in the Maine Mountains by W. H. Bishop; By-paths in the Mountains by Rebecca Harding Davis; and the three serials White Wings by William Black; Washington Square by Henry James jr; and Mary Anerley (which is concluded) by R. D. Blackmore.

The August *Atlantic* includes articles by a large proportion of great names. Thus we have The Stillwater Tragedy by Thomas Bailey Aldrich; Pepacton: A Summer Voyage by John Burroughs; The Archbishop and Gil Blas by Oliver Wendell Holmes; Sylvia's Suitors: A Little Episode by Louise Stockton; Among the Pueblos by Susan E. Wallace; Edward Mills and George Benton: A Tale by Mark Twain; The Preceptor of Moses by Frances H. Underwood.

In *Lippincott*, we find among others, the following specially noticable: American Aeronauts by Will O. Bates; An old English Home: Bramshill House by Rose G. Kingsley; Canoeing on the High Mississippi by A. H. Siegfried; Mallston's Youngest: a story by M. H. Catherwood; The Early Days of Mormonism by Frederic G. Mater; Studies in the Slums; Westbrook: a story by Alice Ilgenfritz; Where Lightning Strikes by George J. Varney.

Among the contents of *Appletons' Journal* for August are the following: Edge-Tools (in two parts—part first) by Annie Bothwell; Health at Home (part third) by W. R. Richardson, M. D.; Some Thoughts on Shelley by Stopford A. Brooke; The Influence of Art in Daily Life by J. Beaverton Atkinson; German Dialect-Poets by W. W. Crane; Michael and I by Julian Sturgis.

The August *St. Nicholas* has two or three excellent serial stories by Louisa M. Alcott and Noah Brooks, and short stories and sketches by Susan Coolidge, Lucy Larcom, Ernest Ingersoll, Sophie Swett, Miss M. E. Bennett, E. T. Disowthy, and others.

The midsummer *Scribner* (August) contains so many beauties, both of pen and pencil, that we can not do it justice in this brief space. We will mention only as of especial excellence The Plain Story of Savonarola's Life; England with Dickens; Our River: an artist's description of the Hudson; The Western Man by Chas. Dudley Warner; etc., etc.

In the *Californian* we find Casa Grande by Henry G. Hanks; Some of our Earlier Poetesses by John Vance Cheney; The Maid of St. Helena by C. H. Phelps; Future Gardens of California by Charles H. Shinn; Abrasions on the North-West Coast by Prof. George Davidson.

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SOME REMINISCENCES OF BOSTON SCHOOLS
FIFTY YEARS AGO.

BY GEORGE W. MINNS,

[Teacher Natural Sciences, Girls' High School, San Francisco.]

[CONCLUDED.]

I ENTERTAIN no unkind feelings toward any teacher under whose control I have been. I am sure every one meant well. That corporal punishment was very frequently administered was much more the fault of the system than of the teachers. Every one then seemed to think that order could be maintained only by severity. Still, I never witnessed any cruel or brutal punishment, and no boy was much injured by "running the gauntlet." No one of my teachers was at all a tyrant, or approached the character of some of the English pedagogues, of whose wholesale merciless floggings their pupils have told us. One of those, the Rev. James Bowyer, of Christ's Hospital, the famous Blue Coat School, appeared to have well deserved the epithet "*plagosus*." He was head master when Coleridge, Lamb, Hunt, and De Quincey attended the school. De Quincey said "the man knouted his way through life from bloody youth up to truculent old age." Coleridge, when he heard of this man's death, said "it was lucky the cherubim who took him to heaven were nothing but faces and wings, or he would infallibly have flogged them by the

way." The "rod of empire" is no idle badge of office in the hands of an English schoolmaster, even at the present day.

To return to the Boylston School. In the hot weather, Mr. Emerson, at recess, would sometimes send out for a pitcher of strong beer; and he and usher Callender (*horresco referens*) would sit at the desk, in plain view of the rising generation, refreshing themselves with this (now prohibited) beverage. They had never heard of the Maine Liquor Law. I am sure that the only bad effect produced upon us was a feeling of intense indignation that he did not "pass it around."

When we consider the few studies pursued in the Boston Grammar Schools at the time I attended them, the inferior text-books, the want of apparatus, the imperfect methods of instruction, and the harsh discipline, we are struck with the great improvement which has been made in their condition. Forty or fifty years ago, "there was," as Mr. Philbrick, for many years Superintendent of the Boston Schools, has said, "no vocal music, no drawing, no object-teaching, no instruction in geography worthy of the name, no vocal training, no physical exercises, no writing of compositions, and no instructions whatever in the elements of science." Arithmetic was taught very imperfectly; I do not call to mind any attempt by the teacher to show the *reason* of the rule; the direction was simply to follow it. Many left school without having obtained an insight into the principles of arithmetic, or even understood the reasons of the rules relating to fractions. In the Boylston School the principal part of the time was occupied in reading and writing. It never seemed to occur to any one that it was worth while to take pains, by written exercises, to enable a pupil to use his own language at least with some degree of readiness and accuracy, or even to learn the right use of capitals and marks of punctuation. There was very little attempt to connect book knowledge with the relations of business life, upon which many pupils were soon to enter. There was no instruction in human physiology, or in the laws of health. The boys knew there was a natural world, but would have been puzzled to give an explanation of the most common phenomena.

From this plain statement of facts, within my own experience, every reader can decide whether a great advance and improvement has not been made in the Boston schools, and whether they are not now much better adapted to meet the varied and growing demands of a great city than they would be if they had been suffered to remain in the condition in which they were left by the fathers. Under the present efficient School Committee, a progressive Superintendent, and an intelligent Board of Supervisors, I look for the best results within a few years.

Let me end these rambling sketches by contrasting the entertainment now provided every year at Boston for the Medal Scholars, with the dinner to which their predecessors were invited, at Faneuil Hall, fifty years ago. All Bostonians know what the former is. It is attended by the Medal Scholars, boys and *girls*, with their fathers and *mothers*, and teachers of *both* sexes. The Mayor, after a short address, presents a bouquet to every Medal Scholar; refreshments are liberally provided, *but not a drop of intoxicating liquor*. An excellent band

plays the best and most appropriate musical compositions, and the whole winds up with a merry dance; after which, at about sunset, all retire, well pleased with the good time they have had. Nothing occurs to mar the enjoyment of the occasion. Now look upon another picture.

It was my fortune to obtain at the Boylston School one of the Franklin Medals; and, according to custom, I was invited to dine with the city authorities in Faneuil Hall. How beautiful the hall looked when I entered it, profusely decorated as it was with flags and streamers! The long tables were covered with a bountiful repast, including all the fruits of the season, and the dinner was excellent, the city providing generously. Wine (sherry or madeira) was furnished in abundance. We boys, the most conspicuous guests at the feast, each wearing his bright silver medal suspended around his neck by a beautiful blue ribbon (surely never was there a more resplendent ribbon), sat at one table in front of the Mayor. After we had satisfied our appetites, his honor arose, and made us a short address, in which he congratulated us on our studies, and our success in obtaining the medals, by no means forgetting to say that Boston, pointing to us, exclaimed with Cornelia, "These are our jewels;" and also adding, that among us was, in all probability, a future President of the United States. He then directed the waiters to fill each boy's glass with wine, and we then and there had the great honor of drinking with the chief officer and other dignitaries of the city, each boy emptying his glass in imitation of his elders.

I was proud of the notice taken of us, of the compliments which the Mayor lavished upon us, and which I had no doubt were deserved; I was glad to be where my merits were appreciated, and began, I am afraid, rather to consider the company as looking up to me, than I to them. Conceive then of my humiliation and indignation when, immediately after the glass of wine with the Mayor, some constables with painted poles came up, and calling upon us to rise, marched us all out of the hall, two constables bringing up the rear, to be certain that no stragglers were left behind. We were ignominiously *turned out*, just as "the feast of reason and the flow of soul" was commencing, of which I longed so much to partake. I wished very much to remain to hear the speeches of eminent gentlemen, to listen to the songs, and the music, and the jokes; in short, to learn exactly what a public dinner is. I tried to slip back, but those constables, unlike some of the modern police, were at their posts and vigilant. It was impossible for me to get by them; so I went into the street, and stood under the windows of Faneuil Hall, listening to applause and roars of laughter, but unable to hear a word, and wishing with all my heart that I could know what it was that caused so much enthusiasm or merriment.

And as I stood, "amazed and curious,
The mirth and fun grew fast and furious,"

and went on increasing until darkness dispersed the guests. But my youthful simplicity did not imagine what was the chief cause of this noisy hilarity.

Now, why were we boys excluded from the hall, and shut out from what ought to have been the best and most intellectual part of the entertainment?

There can be but one answer to this question. It is this: The City Fathers did not wish the young to know what some of them, or of their guests, might say or do, under the influence of intoxicating liquors, of which there was an abundance at all public dinners at the time referred to. No woman was allowed to be present at this dinner; no city officer took his wife or daughter to it; no female teacher, or meritorious scholar among the girls, was invited to it. It was a "gander party," and even the boys were at a certain time turned out from it, in order that the men might sit, smoke, and drink as much wine or other liquors as they pleased; and not blush for shame, in the presence of their children, if some jolly companion, *Bacchi plenus*, told an improper story, sang an indecent song, or in any manner conducted indecorously. And for the same reason the women were not invited. No one could attend, as I have done, a school festival in 1830, and another in 1880, without gratefully acknowledging that the world is improving, and that the "good old times" had some customs "more honored in the breach than in the observance." What an improvement in the old school festival has the mere presence of woman made! She necessarily and immediately banishes wine from it, and also the use of tobacco. She puts man upon his *best* behavior; in her company he becomes courteous, refined, chastened; and what a grace, beauty, and charm she gives to all these school gatherings! In them fathers and mothers, male and female teachers, school boys and girls, now mingle together like one happy family; and the Festival is Thanksgiving and a Floral Exhibition joined together, presided over by the City Fathers, assisted by the Graces.

ADOLPH DIESTERWEG.

BY HENRY SENGER,

[Teacher of Latin and German, Girls' High School, S. F.]

[CONCLUDED.]

I N Diesterweg's school there was no need of such a humbug. With the ever-living force of a developing method of instruction, he dared to fight against cramming. With him the teacher should henceforth, by the mere weight of his individuality, be the principal point of concentration of the work of his scholars, and the latter should no longer study with their memory, but with their reason, in order to receive individual education and natural training and shaping of the powers of their mind. In short, he maintained that, above all, common sense should be used in school.

The course of study of the Berlin Normal School under Diesterweg's principalship was triennial. During the first year the course comprised those studies which the future teacher would have to teach. School commenced at seven o'clock in the morning, and the principal insisted upon his pupils being in their seats at a quarter to seven. In winter the first order given by him was,

“Put out the light”—and he taught in the dark. Nothing was more original and characteristic than his teaching geometry during those early hours in winter. In the dark rooms the geometrical figures had to be constantly kept in mind as he had given and named them, and the demonstrations were carried on without any visible lines. Woe to him who did not pay attention; suddenly he would be called upon to continue the demonstration. It was a mental tournament, in which none but he who had assimilated the lesson completely could keep his saddle; and his scholars learned that which is the ultimate aim of every study, viz., to think, speak, describe, and finally conclude. Here it dawned upon them even before the dawn of day; and when the light of the winter morning had gradually lit up the school-room, they saw him stand before them with his arms folded, or gesticulating with the one, and with eyes so commanding and so searching that they seemed to penetrate every one of his scholars.

During the second year, the normal scholars had to continue their theoretical studies, but during a number of lessons they were assigned to the different teachers who taught in the training school connected with the normal school. Here they had to observe the different methods of teaching in their practical application, and from time to time they would have to take charge of a class in the presence of the class-teacher. The children soon got accustomed to the young teachers, for it was only a change of person that took place, not of methods. Of course the greatest admiration and the highest interest was excited in the normal scholars, when he taught in their presence. He stood before the children like a general leading his army against the enemy. All eyes were fixed on him; the attention of every one was riveted on his teacher. No time was left for things not strictly belonging to the lesson; as long as he was present it was clearly impossible not to pay attention to him. Every question was put to the whole class; anyone who could answer it raised his hand. Whoever failed repeatedly to show a desire to answer his question was suspected of lack of attention, and was told so. Only one was permitted to speak at a time.

At the end of the second year, the normal scholars had to pass an examination before the superintendent and the whole faculty of teachers. After having passed it successfully, they were promoted to the highest class. While belonging to this class they had to teach the whole course of a certain study in the classes of the training school, or in some one of the grammar schools assigned for that purpose to the normal school. Besides this they had to continue their theoretical studies in the normal school, where every one had a different book assigned to him for study, on which he had to report during recitation, which generally terminated with a debate by the scholars on the maxims and ideas found in the different books. In this class Diesterweg taught astronomy and anthropology in the summer term, theory and practice of teaching during the winter term.

That he was a real master of his profession he showed most clearly by the management of the normal school and the training school. He was a very strict disciplinarian, and would not overlook any willful violation of the few laws he had laid down for the government of his school. He impressed his scholars

with a desire to be as frank and fair in their dealings with him as he was with them ; but he would wield his authority without mercy where he met with egotism and arrogance. In the training school he showed the whole profession that he was able to do himself what he insisted that others should do. He started the training school with about twenty scholars, six months after he had come to Berlin. In a short time the school had increased to four classes ; during the last years of his principalship there were six classes. Besides himself, all the teachers of the normal school and several of the normal scholars of the highest class taught there. The classes averaged no more than thirty pupils, which could easily be instructed, and graduates of the first class would generally enter the third class of a gymnasium—a class corresponding to the middle class of the classical course of the Boys' High School of this city. The school was everywhere called Diesterweg's school, and the most distinguished and the best educated families sent their boys to this school ; for the young teachers there, though but beginners in their profession, succeeded marvelously with their pupils under the direction of their great master. The activity and the enjoyment, which teachers and scholars seemed to share alike, was something to which people had never been accustomed before, and the normal school with the training school became one of the great curiosities of Berlin. Diesterweg was one of the teachers of the most talented prince of the Hohenzollern family, Frederick Charles, and as long as he was principal of the normal school his normal scholars were generally selected to give the first instruction to the young princes of the royal family.

How his graduates impressed the people can easily be understood by the following remark of Spitteke, the highest authority on high schools of his time, who said in one of his reports : "The normal schools for high schools might easily receive an organization similar to that of the Berlin normal school for common schools. If we consider that young men who have enjoyed but a limited education, and had but little general information upon entering the school, have as a rule acquired a masterly command of the art of teaching after a course of study of three years, what results could not be expected if highly educated men of real attainments were trained in a school similarly organized, to be professors of high schools and colleges? Then, indeed, the golden era of secondary education would set in."

As a normal school principal Diesterweg had proved to be a decided success, and as the government did not require anything beyond that from him, he might well have rested there. But a man of his stamp would not, nor could he be satisfied. The elevation of his profession, the improvement of the material and spiritual condition of teachers, the liberation of the schools from the control of the clergy, appeared to him to be the ultimate ends for which he should live. He had already published a great number of text-books based upon his methods ; and the famous "Guide for German Teachers," a detailed manual of didactics and methodology, the last edition of which containing Diesterweg's biography, has been the principal source of this sketch. He founded the "Pedagogical Society," in 1832, for educated men of all callings, for the discussion of matters of education ; he revived the "Teachers' Union" and started

the "Union of the Younger Berlin Teachers," in 1840, mostly composed of the graduates of his own normal school. At the same time he was much interested in the "Social Club of Teachers," which had been organized in the same year. What a powerful man he was, nothing proves more strikingly than the fact that he succeeded *once* in uniting these four distinct clubs, which probably were waging a constant war against one another on the most trifling points, for one grand celebration; and this loses nothing of its significance, from the fact that it was impossible even for him to repeat this experiment during his life.

Such increasing agitation, and the great enthusiasm the brilliant results of his school had aroused among all thinking people, began to make the Prussian government suspicious of him. Not until 1840 did there appear signs of any disfavor; but as soon as his friend Altenstein, the secretary of public instruction, had died, a sudden change with regard to him set in, which gradually grew to more or less hostility. King Frederick William III had died during that year, and his successor, Frederick William IV, slowly drifted toward that romantic "Christian German" notion, which wanted to surrender the schools, and actually did after the turbulent year 1848, to the clergy, from whom Diesterweg and his followers had so successfully labored to emancipate them. His former scholars celebrated the twenty-fifth anniversary of the foundation of the Moers Normal School in such a manner that his name became the foremost of all German teachers; and when, a year later, in 1846, the centennial of Pestalozzi's birth-day was observed all over Germany with the greatest enthusiasm, Diesterweg's name was joined, as if by common consent, to the name of the great master of education. This proved too much for the absolute government of those times. He received notice that his religious views and his political tenets were not in harmony with the proper management of a state institution like his normal school, and a committee was appointed to inquire into his management of the school. A long investigation, accompanied by the usual intrigues, did not reveal anything on which he could be discharged from the civil service, but he was requested to resign his position as principal of the Berlin Normal School, and await further orders. They could not dismiss an officer in the civil service of Prussia, even in those times, without due cause—either dishonesty or professional inability—nor could they transfer him without his consent, unless they promoted him. He was offered the principalship of the Berlin Asylum for the Blind, which he respectfully declined, as the new position was of the same rank as the one he was holding; and as they were determined to demolish his normal school, they had to allow him his full salary while awaiting further orders.

In 1850 they put him definitely on the retired list, and in that year they commenced to pull back most energetically in educational matters. Their first attack, of course, was directed against the godless normal schools. They surrendered bag and baggage to the clergy; and in order to show what evil spirit controlled the normal schools of the whole country for almost twenty years afterward, it may suffice to state that scholars in the Prussian normal schools were strictly prohibited from reading the works of the great American poets. What must Diesterweg have suffered, when he saw them tear down mercilessly

everything he had built up during so many years? When he left the normal school, the training school lost almost one-half of its pupils. His successor tried hard to attract scholars, but in vain. Diesterweg's genius did not return to the old school; and when they finally abolished the instruction in Latin, the school sank into that state of insignificance which had been intended for it.

Though Diesterweg was out of office, he devoted his time exclusively to the schools, and did not allow his enemies to do their work unnoticed by the people. He raised his voice wherever there was danger ahead, and he was sure to be heard and trusted and loved throughout the country. He became a member of the town council of Berlin, and was a prominent member of the Prussian parliament up to the time of his death.

Diesterweg's family life was exceedingly happy. He had married in 1814 Miss Enslin, the daughter of a teacher, and they were spared to each other to celebrate their golden wedding, surrounded by three sons and four daughters, all well established in life with their own families. In 1866 his wife died, and ten days later, on the day the Berlin schools closed for their summer vacation, Diesterweg passed away for his long vacation; a true martyr to his cause, as he was not spared long enough to see that change set in which realized so many of his cherished hopes, especially the final liberation of the scholars from the control of the clergy, which has brought the schools of his country so much nearer to the "Service of the True, the Good, and the Beautiful."

THE CASTLE OF BONCOURT.

BY GEORGE GOSSMAN, A. M.

[From the German of Chamisso.]

I dream myself back to my childhood,
 And shake my locks of gray;—
 Ye visions, why haunt me so homelike?—
 I thought ye had all passed away.

There rises from shady enclosures
 A castle so stately and high,
 I know it by its cornice and towers,
 The portals, and bridge near by.

And down from its ancient escutcheon
 The lions look kindly at me,
 I greet each as an old-time acquaintance
 I had long been desirous to see.

There lies the Sphynx at the fountain,
 And there is the fig-tree, and stream,
 And behind those quaint old windows
 I dream my childhood dream.

I enter the court and the chapel—
 I seek the graves of those

Whose dear names with inscriptions
 Are cut in its marble rows.

Here stopping to read and decipher,
 My eyes they gaze in vain,
 Although a dim sun-light is gleaming
 Through the colored window pane.

Thus thee, Oh Home of my Fathers!
 Here dreaming I fondly retrace;—
 Earth knows thee no more forever
 And the plow goes over thy place.

Be fruitful, thou spot to me dearest!
 And receive this blessing from me;—
 And be *he* doubly blest, who shall ever
 Conduct a plow over thee!

But I will be up and adoring,
 Will take my harp in my hand,
 And so, the wild world beroaming,
 Go singing from land to land.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[Santa Barbara County.]

CHAPTER XIV.—THE LITTLE BROWNS.

THE little Browns have their faults—some of them inborn, others the result of education.

What is a fault? Something we do not like. What one calls a fault, another esteems a beauty. Anything we like possesses, for us, a certain beauty, and what we do not like seems to us more or less ugly. We like some people despite their faults, and may even like them better because they have certain faults, which bring them nearer to, or a little below, our own level. Our standard of right and wrong, the result of our education *plus* our natural tendencies, inherited from the education of our ancestors, is constantly changing. We do things at certain periods of life or in one locality which we would never dream of doing at a different period of life or in another place. Echoes of others' opinions, we are swept by the resistless surge of surrounding life into dark and ill-smelling caverns, choked with the weeds and rubbish of by-gone days.

Yet, we cannot be just like our neighbors, howsoever hard we try. It is not possible for two persons to have the same ideal standard of right and wrong, the same mental conception of an object, a truth, or God. The ideal will be faulty as the person is faulty; yet it is worth our while to create an ideal toward which to strive, for we can ever think better than we can do.

Though John Dean plainly saw many of the little Browns' faults, yet the boys were in the main such lovable children that he made great pets of them, and they repaid him, as children do, with loving selfishness and tender waywardness.

"Sometimes I like you better than anyone else in the world," Dick told John one day, "and then when you make me do what I don't want to, I can't see that I like you at all."

One pleasant afternoon in June the little Browns came to visit John Dean, and tired with their walk, they were glad to seat themselves on the lounge by John Dean's side and watch him as he was somewhat awkwardly mending an old pair of pantaloons.

"Why don't you let a woman do that, Mr. Dean?" inquired Dick. "My mother always mends mine."

"But you see I have n't a woman, Dick."

"Why do n't you get one?" innocently inquired Harvey.

"I do n't know where to find one to suit," replied John. "I am very particular about my mending, and if I should get a woman that would sew a blue patch on a pair of brown overalls, it would hurt my feelings badly."

The little Browns looked puzzled.

"Then if she should scold me for wearing holes like these in my clothes," continued John, "that would be awful, you know."

Yes, the little Browns knew what such scoldings were, and Dick said:

"You need not care for scoldings. Mamma often scolds me for wearing holes in my clothes, but I do n't care much for that. She says I get them in just to make her trouble, but that is n't so."

"Don't find fault with your mother," said John, placing his fingers over the little boy's mouth. "You must remember that she never was a boy, and so she cannot tell how easy it is for boys to wear holes in their pantaloons."

"If I had two little boys," said Dick, reflectively, "I should never scold them for wearing out clothes, and I should never whip them when they did not deserve it, but when I did promise to whip them I would always do it."

"If they tried to be good little boys, you would never need to promise them a whipping," said John, knowing that Dick was thinking of his mother's oft repeated but seldom executed promises to whip the boys the very next time they did this or that.

"Mamma hardly ever whips me. I hold my breath so it scares her," said Harvey, complacently.

"I kicked and scratched awful the last time she whipped me," said Dick, confidentially. "She told papa I was getting most too strong for her to manage. She said I was as strong as a young ox"—proudly.

John looked gravely at the little boy.

"What would you think of Willie White, if you should see him kick his mother?"

Dick hung down his head, for Mrs. White was a great favorite with him.

"When your mother whips you," continued John, "she does it to try to make you better; and you should never try to hurt your mother who loves you and does so much for you."

"She had n't ought to get mad and whip us for nothing," persisted Dick. "Sometimes she lets us do things, and never says a word, or laughs at them; and another time she whips us for the very same thing."

As this was undoubtedly true, John could think of no suitable reply. He did not wish to check the little boys' confidences, for he felt that so long as they confided their thoughts to him freely and trustingly, he could have more influence over them to guide them aright, than if he should check them, and refuse to listen to their remarks about their parents. Children can be taught to honor their parents only so far as those parents seem worthy of honor. An ideal standard may be set before the young which will advance as they advance, expand and grow as they grow in wisdom, but human models are but dubious guides. The boy must resemble the parent, but proper education can make him better than that parent.

While John and Dick had been talking, the sharp eyes of Harvey Brown had espied John's sugar-bowl filled with white loaf-sugar. He instantly felt very sugar-hungry, and began to study how to give John a gentle hint.

At last he said, "Papa does n't buy sugar like yours."

"No?" said John, inquiringly, with an instant appreciation of what was in the little boy's mind, and desirous to see how he would maneuver to obtain a lump. "I nearly always buy that kind."

A little pause.

"Is it better than the other kind?"—anxiously.

"Yes. It is generally purer. Dishonest people often mix white earth and other things with finely ground sugar, and cheat folks who buy that kind."

"That is wrong," said Dick, promptly. "I should not like to buy dirt for sugar. What makes folks want to cheat other people, Mr. Dean?"

"They do n't know any better, Dick. If people knew just how much they hurt themselves every time they try to cheat somebody, they would stop doing so. But they think because they sometimes make a little money by cheating, that it pays them to do so; but it never does pay in the end."

"But are there not people who do not cheat?"

"Yes, there are some who do not cheat," replied John; but he could not help thinking that there were few who did not cheat in one way or another.

"I know you would not cheat anybody," asserted Dick, confidently.

"What makes you think I would not?"

"Because a long while ago, when you weighed the potatoes to give me for papa, you put in a couple of handfuls, so that you would be sure to give good weight, you said."

"Yes, I learned to do that from my father," said John. "When he measured his grain, and put it in the bags, he always put in an extra double-handful before tying the bags. 'Quaker measure,' he called it."

"I never knew those who bought grain of him to measure it after him but once," continued John, more to himself than to the boys. "A new clerk insisted on remeasuring the grain, and father insisted on being paid for all those odd handfuls, when the man got through, and found quite a little more than father had told him there was."

Harvey thought they were wandering quite away from the sugar question, and he now renewed his attack with, "Does that lump sugar taste *very* different from the other kind?"

"Not very different," said John, smiling. "Would you like a little to see how it tastes?"—as if the thought just struck him.

"If you please," and his eyes sparkled as John placed three lumps before each of the boys.

"This is better than mamma's sugar," decided Harvey. "She hardly ever gives us any. She says we"—he stopped and looked down.

John easily guessed what he was going to say.

"I hope you do not take it without asking," said he, gravely.

"Sometimes," was the faint reply. "She hides it away from us, and says we can't find it"—rather defiantly. "But we always do find it, and get a lot before she finds it out and hides it in another place." And Harvey looked up triumphantly, but meeting a disapproving glance, cast his eyes down again.

"I like sugar very much," said John, slowly, "but if my mother put away some sugar, and did n't want me to touch it, I never would do it, if I had to go without sugar all the rest of my life." This last was spoken very decidedly.

"But I think she might give us some, when she knows we like it so well," complained Harvey.

"So she might. But the sugar is hers, not yours; and if you take any when she does not give it to you, that is stealing; and it is just as wrong to steal from your mother as from me."

The little Browns looked incredulous.

"Stealing is stealing, whether you take from one person or another. Some people think it no harm to steal from a stranger; you think it no harm to steal from your mother. Which is right? Is either right?"

"Harvey is six years old to-day, and I will be eight next week"—abruptly changing the disagreeable subject for a pleasant one, as children so often do.

"And that is old enough to know that stealing sugar is wrong. Is n't it?" said John, drawing the boy nearer to him, and looking him straight in the face.

"Yes, sir," very faintly. "How many chickens have you, Mr. Dean?"—another effort to change the subject.

"Nearly a hundred, good and bad," said John, wisely concluding that it was time to talk about something else.

"Good and bad," echoed Harvey, inquiringly.

"Yes. Did you not know that some of the chickens are naughty as well as some folks? See that brown hen trying to pick a hole in that sack. I give her all the grain that she can eat, but she will leave what I give her, and peck away at the sack until she gets a hole in it, and there she will stand and eat the stolen grain that she would n't touch if I should give it to her."

"How funny!" said Dick, who could not help seeing the likeness between some of his own actions and those of the hen, as John intended he should.

IMPORTANCE OF SIMPLE ILLUSTRATIONS.

BY H. SAM. EWING,

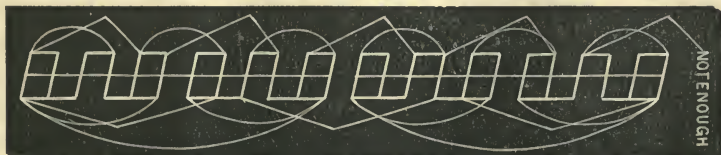
[Rio Vista, Solano Co., Cal.]

A METHOD of bringing the scheme of common fractions within the comprehension of pupils has been presented in the July number of the SCHOOL AND HOME JOURNAL to the readers of that excellent publication. It is a method which I have used a long time, wondering all the while, that it had not been resorted to by others, who had instead abandoned explanations and only required memory and a use of rules in the instruction of pupils first entering common fractions. I have been pleased to see children who had progressed nearly through Robinson's Practical Arithmetic, hail with delight this simple explanation, showing that they had never comprehended the mathematical principles involved in fractions. A wide-awake teacher who can bring his lecture to each point in his explanation at the right instant, can accomplish wonders with this method. It is not of course adapted to the purpose of those who have the kind of dignity which prevents them from discussing anything

which can be made to seem so simple, nor to those who entertain the idea that pupils must learn by heart what they are to understand only in the future.

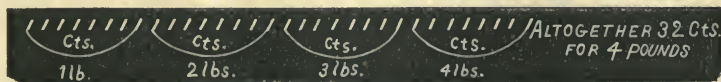
I often use some such simple method with advanced scholars while endeavoring to explain to them a process of analyzing some difficult problem. The simplest, and seemingly the most commonplace illustrations will surmount difficulties as if by inspiration. I often discuss the impropriety of adding a table and a pile of lumber together, and considering the result either two tables or two piles of lumber, but they do not yet apply the reasoning alike in both instances; but when I have them imagine the making of a table *out of* the pile of lumber, or the reduction by the use of the hammer, of the table to a pile of lumber, they understand readily that things must be of the same *kind* before they can be united and *named* with a *numerator*. Then I use the diagrams, and we add fractions with different denominators, and the joy depicted in the pupils' countenances is indeed most gratifying.

While hearing a class recite the multiplication table, I often have some such a diagram on the blackboard as this:



Here we have twelve times two and two times twelve, three times eight and eight times three, etc., but not *exactly* four times five nor five times four. I find that children appreciate this illustration, and after it is given them, entertain less animosity for that which troubles their memories. They can now see the *necessity* of knowing how much three times eight are, and they seem to acquire a memory of it more easily after they *know the multiplication table by sight*.

I buy four pounds of rice at eight cents per pound, how much does it cost me?



Now while all eyes follow the pointer on the blackboard, we analyze.

A BEAUTY AS AN EDUCATOR.

BY W. W. S.

“HELLO, Tom, look here.”

“Well, what is it?”

“Here’s that Mrs. Langtry; do you think she is handsome much?”

“Well, I do n’t see where it comes in.”

“Why, Tom, my teacher’ll discount her.”

I was looking at a collection of photographs. The boys came up the while, curious like myself.

I walked on, leaving the boys in the middle of a warm discussion on preferred types of beauty. The incident served, however, to recall an assertion made sometime since, that youth is far more nicely critical than matured minds, in matters of this kind, and indeed in all superficial affairs. A boy starts out into life with the impress of his surroundings. Surrounded by grossness he becomes noted for vulgarity. "Pity is akin to love," and strong admiration for a pronounced trait of character almost invariably impresses the *tout ensemble* of the owner upon the mind of the admirer. In various ways the critical judgment of the rising boy is crossed and warped, so that long before the boy's hair commences to silver he is in the position of the perturbed individual who was sure he could be "happy with either, were t'other dear charmer away."

Look at an old couple, grown old in each other's society. Their dispositions are alike, and even their faces are very much alike. Speak to them of it, they will tell you most probably of opposite traits and strongly contrasting features at the outset of married life.

All this impresses me strongly, as an educator, with the responsibility of my position. We teachers are professional molders. The body, the soul, the spirit, all come under our treatment. An old boot taken to the shoemaker becomes strong and serviceable; a wrecked, weather-battered, ocean-broken bark under the hands of the builder becomes an almost living thing of beauty; a crushed mass of rusty plates and bolts grows beneath the skill of the machinist into a cloud-belching power that bears in its wake the commerce of the world. How much more potent, then, should be the outcome of the teacher's work. His material is on hand, impressible as wax. Under his skillful hand the form should grow bold and manly; the spirit strong and reaching; the soul, a noble receptacle for high thought, and heavenly aspirations.

SCHOOL LIBRARIES.

BY JOHN SWETT,

[Principal Girls' High School, San Francisco.]

IT should be one of the special duties of the new County Boards of Education to give special attention to school libraries. True, under the law, the power of buying books rests with the teacher and the clerk of the board of trustees; but, practically the power rests with the county superintendent and the county board.

The purpose for which school libraries were established under the law of 1866, was to secure to school children a reasonable supply of children's books. In many cases the law has been evaded or perverted. Instead of buying children's books, trustees have expended the money in purchasing reference books for teachers—in costly cyclopedias, Bancroft's *Native Races*, etc. It is in

the power of county boards to correct all this. Every school should have a good number of small, cheap, interesting story-books for the young children—not books for grey-haired teachers. Every school ought to subscribe for the two leading children's periodicals: *St. Nicholas*, and *Harper's Young People*. Then every school ought to have in its library a good supply of School Readers in addition to those owned by the pupils and adopted by law. The library ought to contain sets of First, Second and Third Readers, sufficient to supply each grade, as soon as the Reader adopted has been read through once. Children need fresh reading matter, and more of it. Readers are cheap, and their matter, in general, is good. The most attractive books in my library to my own children are half-a-dozen complete sets of Readers, which I imported from England.

If Appleton's Readers are in use, buy sets of the revised Mc Guffey's, and *vice versa*.

Then the library should have, for the use of both teachers and pupils, at least three series of geographies, grammars, and arithmetics, in addition to the series adopted by law.

Every school ought to subscribe for the PACIFIC SCHOOL AND HOME JOURNAL, and for the *New England Journal of Education*, or the *Chicago Weekly*.

OCEANIC GEOGRAPHY.

THERE is a lack, it seems to me, in the present system of teaching geography, in that so little is taught about the sea. True, the land is the more important part to be studied, could we have but one; but why not learn something about the whole surface of the earth?

What is there to be taught about the sea? How shall it be done?

Suppose a class to have finished the study of North and South America; then, instead of immediately going on with the study of the continent of Europe, tell them that to get from America to Europe a wide ocean must be crossed, and give them as their next lesson, to find out anything of interest about the Atlantic, suggesting some things for them to think about, as the depth and color of the water, the distance across the ocean at various points, etc., selecting things about which there would be some probability that they could find out something. Most classes, however, would search out very little for themselves, and so the next recitation must be mostly made *by* the teacher *to* the class. The best form for the teacher to put his information in, would perhaps be to take his class on an imaginary voyage.

Suppose Rio Janeiro to be the starting port. Tell them of S. E. trade-winds, which carry them northward to the equator, with the accompanying fine weather and fine sunsets; of the equatorial calms, with their sudden squalls and violent showers, furnishing the ship with a supply of fresh water.

Then up through the N. E. trades, seeing dolphins and flying-fish; watch-

ing the disappearance of the southern cross, and hailing the north star and the first bit of gulf-weed as signs of increasing north latitude.

Still farther, the Sargasso sea is perhaps entered, and the region of variable winds and weather reached, and finally passing through the English Channel, with so many other vessels of all nations, the ship arrives at London. Now, the class will be ready to begin the geography of Europe, having got so far in a legitimate manner.

Of course, no description of the Atlantic would be complete without speaking of that great ocean river, the Gulf Stream, and many other features that I have not mentioned.

Another suggestion on the same subject:

Let the teacher take a portion of the shipping list from one of the newspapers; read it to the class, or perhaps give the items of it to different members of the class, for them to find the location of the sea-ports mentioned, some description of them from the gazetteer or geographical dictionary, if they have such books to refer to, and the length of time which the vessel reported took to make the passage.

An exercise of this kind will give a flavor of practicality to the study of geography, and to some of the boys will be especially attractive.

W. E. M. in *The Teacher*.

EDUCATIONAL GLEANINGS.

[From the Scrap-Book of a Teacher.]

FACTS are the materials of our knowledge, but the mind itself is the instrument; and it is easier to acquire facts than to judge what they prove, and how, through the facts which we know, to get to those which we want to know. We are always needing to know what is actually true about something or other. In what consists the principal and most characteristic difference between one human intellect and another? In ability to *judge* correctly of *evidence*. The intellectual part of our education has nothing more important to do than to correct and mitigate this almost universal infirmity. To do this with effect, needs all the resources which the most perfect system of intellectual training can command. These resources, as every teacher knows, are but of three kinds: first, models; secondly, rules; thirdly, appropriate practice. The models of the art of estimating evidence are furnished by science; the rules are suggested by science; and the study of science is the most fundamental portion of the practice.—*John Stuart Mill*.

On the whole, for future learning and work, for knowledge and capacity, for the power of practical apprehension, and of forcible and well-illustrated exposition, for moral as well as mental vigor, the teacher must bear in mind that the cultivation of the *logical* intelligence should be postponed to that of the *conceptive*.—*Curriè*.

I conceive it would be one of the greatest boons that could be conferred upon England, if henceforward every child in the country were instructed in the general knowledge of the things about it—in the elements of physics and botany. But I should be still better pleased, if there could be added somewhat of chemistry, and an elementary acquaintance with human physiology.—*Huxley.*

I believe that the greatest intellectual revolution mankind has yet seen is slowly taking place by the agency of science. She is teaching the world that the ultimate court of appeal is observation and experiment, and not authority; she is teaching it to estimate the value of evidence; she is creating a firm and living faith in the existence of immutable moral and physical laws, perfect obedience to which is the highest possible aim of an intelligent being.—*Huxley.*

We should aim in our schools to teach that kind of knowledge which will awaken the mind to such kinds of activity as are necessary to its growth, and to teach in such a manner as will enable the mind to thoroughly master what is taught. * * * The number of branches now taught may not be too many, but the amount of facts attempted to be taught under each branch is too large. The *quantity* of arithmetic, geography, grammar, etc., should be less.—*Supt. Dickinson, of Mass.*

ON THE WOLFENSTEIN.

BY BRET HARTE.

“MAN TAKES NOT HENCE WHAT HE
BRINGS NOT HERE,”

Runs the legend quaint on the faded
sign
Of the inn where the Wolf's-stone rising
sheer
Frowns down on the rushing Rhine.

A quaint conceit, but a promise cold
To a weary guest at the Golden Lion—
Albeit no better wine is sold
O'er the plain that the Wolf looks high
on.

Mine host of the Lion is smooth and fat,
As he stands at the door in the twilight
weather,
Brushing the dust from the stranger's hat,
And smoothing the small *Jagd* feather.

“The moon is climbing the Wolf's-stone,”
He said, “and the *Herr* will do great
honor

To our Lady's shrine on the mountain's
brow.

If he saw the moon shine on her,

“Or stood in the arch of the old Wolf's
Tower

When the moon looks through, he would
see—they say—

The past revive, with the knights in their
power,

And the ghosts of a by-gone day!

“He would see the maiden who built the
shrine,

And the wolf that bore the lamb to his
den,

And Lord Conrad—raging from Palestine,
And the shock and the clash of men!”

A mile of darkness, a mile of heat,
A mile of dust from the wayside vine,

A mile of dreaming—until my feet
Rest high o'er the rushing Rhine.

The moon shines full through the broken
arch,

And rides once more o'er the lower plain;
Then a mile of darkness and dusty march,
And I reach the inn again.

“You have seen—*mein Herr?*” “I have.
Nor fear

But I read your legend henceforth aright :

‘MAN TAKES NOT HENCE WHAT HE BRINGS
NOT HERE,’

’Tis true, oh mine host. Good night.”

And what saw I on the Wolf's-stone, led
By potent fancies and spell-possessed ?

—Only my brother, long since dead,
Asleep on his mother's breast.

—*The Independent.*

EDITORIAL DEPARTMENT.

ARE THERE TOO MANY STUDIES IN OUR SCHOOL COURSE?

CANT is an article cheap and taking. It is twin-brother to hypocrisy. It is especially affected by a certain class of newspapers, who use it as an easy substitute for knowledge and principle. To talk cant is safe; it makes a good impression on the unthinking, who look with awe upon every piece of printed paper as a high authority. In school matters, in particular, there is capital to be made by talking cant. The average parent finds it not too easy to train his children, so he is generally willing enough to shoulder the blame for all shortcomings on the school or teacher.

The latest form which this spirit has assumed, is the charge of overcrowding the course of study in the schools.

Now, there is not a word of truth or reason in the whole talk. Newspapers, which know nothing about the matter, deliver themselves periodically in column editorials; they seek to pull down by hasty, ill-considered, and unfounded assertions, what has taken years of conscientious, *knowing* effort to build up.

There *is* cramming in our schools, yet our children are not crammed. Beneficent Nature relieves the overstrain by forgetfulness. We have seen more American children made sick by improper food, poor ventilation in sleeping and living apartments, and improper habits generally, than by overstudy.

The fact is, that the majority do not study enough; and that this newspaper talk is a constant encouragement, if not a direct incentive, to the formation of habits of idleness. Honest, systematic brain-work, so practiced as to become a habit in school life, is the best preparation for an industrious manhood and womanhood. The curse of our country to-day, is idleness—not merely of the hand, but that general indisposition to do any kind of labor, which results in a demand on the rich and provident to share their accumulations with the shiftless and needy. We know whereof we speak, when we say that the majority of our boys do not spend two hours a day in real study, out of school; and our girls do but little more. In fact, they hardly know what actual study is, so little do they know how to apply themselves.

It is time for some one to arise and tell a few home truths to some of our me-

tropolitan newspapers, which, aspiring to authority in education, frequently break out in crude, irrational diatribes on school matters. They deceive and mislead the people; they are the blind leading the blind.

They claim friendship to the common-school system, but it appears such friendship as Brutus felt for Cæsar. A treacherous friend is more to be feared than an open foe. In the former category one or two of our city papers undoubtedly belong.

It is claimed there are too many studies in the common-school course, and an urgent and piteous plea is made for the three Rs.

Will our critics tell us what more than "the three Rs" is now included in the school course, and what they would have us omit to advantage? Within our experience and observation, our schools give only a very elementary knowledge of geography and history, a few simple facts in physiology and hygiene, and a smattering of grammar. The course, so far, is elementary indeed! The drawing and music, about which we hear so much as luxuries and extravagancies, are in the nature of school diversions, tending to relieve the tedium of the daily routine, and lighten the tasks of both pupils and teachers. We are prepared to demonstrate (basing our proposition on educational literature, foreign and domestic) that nowhere in the civilized world are the intellectual labors of youth less burdensome and wearing than with us—and nowhere are the complaints and fault-finding more general. An English school-boy of thirteen has nearly double the mental work laid out for him that his American cousin has. A French school-boy has fully as much; a German, considerably more.

The question, after all, is a physiological one. Is eight hours' light and varied mental labor too much for the growing human being? It is a question to be settled by experts—physicians and teachers. The former have studied the human frame; the latter have observed the effect of brain-work on minds of every degree of mental force and acumen.

Writing from the stand-point of a teacher, who has devoted years to the careful consideration of this one special point—who has investigated every detail bearing on it—we are firmly of the opinion that our school course is not overburdened, our children not oppressed by too much work of any kind, and that if there is any mental or physical deterioration in the rising generation of our country, it must be ascribed to far different causes than overwork at school.

KIND WORDS.

CONGRATULATIONS have poured in on us from every side. There appears to be a general hearty approbation of the act of the State Board of Education in adopting the JOURNAL as the Official Organ.

It is a source of deep and lasting gratification for us to learn that our best teachers and superintendents appreciate the efforts of the JOURNAL; and with one accord that they indorse the State Board for their decision.

If we have labored earnestly in the past, our readers may rest assured we shall not remit our endeavors in the future. The ends we have in view are important and definite. Among the first is the elevation of the teacher's calling to

the rank to which it is entitled—a profession—and its recognition as such by the world.

In this work we have a right to expect the continued and hearty co-operation of all calling themselves teachers. We shall not grow lukewarm, nor must they. At the price paid by the State for the special edition sent to the district clerks, there is absolutely no profit. It rests with the teachers now, as before, to continue their support.

We cordially invite correspondence, articles, and educational intelligence from every source. In a few months more the Legislature will meet, and it will be well to discuss through our columns the many educational wants and questions now so urgent. If the interests of our schools are neglected, or needed improvements in the law ignored, it will be the fault neither of the State Superintendent nor of the JOURNAL, but of those school officers and teachers who fail to make known defects, or to suggest improvement.

We are thoroughly in earnest in the effort to improve the JOURNAL as an educational and literary periodical, and at the same time a means of bettering the condition of our schools and their teachers.

To assist us in these things, we again invite the general aid of all interested in the American idea of popular education.

THE CHAUTAUQUA LITERARY AND SCIENTIFIC CIRCLE.

IT gives us great pleasure to announce that with this number the JOURNAL will have a department devoted to the work of the C. L. S. C. on the Pacific Coast. Miss L. M. Washburn of the State Normal School, the secretary of the society, has kindly consented to conduct this department. Our readers are to some extent already familiar with the work this society designs to do, and the good it has accomplished. Thousands of homes have been made brighter, thousands of hearts happier, by the mental employment and discipline afforded by the systematic instruction laid down in the course of study of the society.

It is a subject in which teachers and those connected with education should be particularly concerned. In fact, many such are already enrolled as students on the lists of the C. L. S. C.

The JOURNAL, through Miss Washburn's department, will be the medium through which communications and instructions of all kinds will be made to Pacific Coast members. The progress of the Circle, topics for lessons, and all matters calculated to promote harmonious and uniform work, will be regularly and clearly set forth.

We trust the active interest of all our readers will be directed to this important subject.

Correspondence should be addressed to the secretary at San Jose, who, we know, will be pleased to aid all inquirers.

Those Circles desirous to subscribe for the JOURNAL will be furnished at the rate of \$1.50 per copy per year, provided no less than ten names are sent at one time, and subscriptions paid in advance. All single subscriptions are \$2 per year.

HIGH WAGES.

WE take ground boldly and unequivocally for high wages for all classes of laborers. High wages means prosperity and progress. It means the elevation of the laborer to a self-respecting plane. It means ambition—the best ambition, which aims at the full enjoyment of moral and intellectual life. It means the elevation of labor to a stage where its nobility will be something more than a catch-word for demagogues to use, and then make sport of. The laborer whose hire is worthy an upright, noble manhood, is higher than he who is worthy his hire. High wages means that true republicanism which respects no caste, save that of refinement and worth.

The men who oppose high wages are the weeds of humanity. They have spread their life-sucking roots deep into the soil, and seek to drain therefrom all the nurture. Humanity to them is nothing; the welfare of the whole race, nothing; the comfort and enrichment of an infinitesimal portion of the family of men, everything. They can not, or will not, see that high wages means culture, peace, prosperity to all mankind.

THE Educational Bureau is in active operation, bringing trustees wanting teachers into communication with the most desirable educators open to engagements. The manager, Mr. Savage, is exercising great care in sending out teachers, securing only such as furnish evidence of their ability to give entire satisfaction.

Trustees in need of teachers, and teachers in search of schools, or who desire to change their location, will do well to address the Bureau as per advertisement in another place.

The pressure upon our columns necessitates deferring book reviews until our next issue.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE,
Washington, D. C., August 5th, 1880. }

HON. FRED. M. CAMPBELL, *State Supt. of Public Instruction, Sacramento:*

SIR—At the suggestion of the Hon. John Eaton, Commissioner of Education, I take the liberty to ask for your co-operation in the work of collecting the statistics of School Taxation, and School District Debts. An effort will be made by this division of the Census Office, to obtain, for the first time, an authentic statement of the debts of all school districts throughout the United States, and it will greatly facilitate this work if you will kindly advise what will be the best method of procedure in the State of California. It is especially desirable to procure a list of the names of the county, township, or school district officers, to whom we might apply for the information, with a fair prospect of obtaining satisfactory results. The report of your Bureau will undoubtedly give the facts in relation to taxation, but Gen. Eaton fears there will be more difficulty attending the inquiry into the district

debts. It is unnecessary to point out the value of reliable data of this kind, especially to the State Superintendents of Public Instruction, who have, by their co-operation with the Educational Department, at Washington, already done so much in promoting the collection of educational statistics. If you will kindly consent to assist us in the matter, by suggesting the best method of operation in your State, the favor will be highly appreciated, and gratefully acknowledged.

Hoping to hear from you at your earliest convenience, I have the honor to be, sir,
Very respectfully yours,

R. P. PORTER, Special Agent.

DEPARTMENT OF PUBLIC INSTRUCTION, OF THE STATE OF CALIFORNIA, }
Sacramento, August 20th, 1880. }

TO THE COUNTY SUPERINTENDENT AND SCHOOL OFFICERS:

In response to the foregoing, I have communicated with the Department at Washington stating that we will furnish from this office the desired statistics.

In furtherance of this design, I have now to request that each County Superintendent will forward to this office, so soon as possible, a full and correct statement of,

1. The bonded debt of the districts of his county.
2. The floating debt of the districts of his county.

If a district has no bonded or floating debt, let it be so stated.

FRED. M. CAMPBELL, Superintendent of Public Instruction.

It is the desire of the Superintendent of Public Instruction to embody in his report to the Governor, in addition to the statistics already furnished, such written reports concerning the condition of the schools in the several counties, together with such suggestions and recommendations as the county and city superintendents shall be pleased to make, and to publish the same over the names of the authors.

The changes in our school system wrought by the new Constitution, and the laws passed at the last session of the Legislature; the relegating to the counties of so many of the powers and duties formerly vested in the State Board; the organization of county boards for the exercise of those powers and duties; the new conditions thus created, and the manifold and complex questions arising therefrom, will make these the most interesting, important, and useful features of the report. A generous response from every superintendent in the State is therefore desired and expected; and the invitation is extended at this early date, that none may fail for want of due and timely notice to respond fully and in season. Let the communications all be filed on or before the 15th of October.

An additional supply of copies of the school law is now on hand, subject to order. Also the diplomas of graduation from Grammar Schools.

The Educational Diplomas, which were granted by the State Board, have all been sent out. The Life Diplomas will all be forwarded by the 1st of the month.

The following letters explain themselves :

“DEAR SIR: Supt. — is correct in the matter concerning which you write. The State Board of Education sits as a court, in considering the revocation of certificates and diplomas, and will only act upon legally certified evidence, and after the accused has been duly notified, and allowed an opportunity for defense.

“To follow any other course would be to open the door to persecutions from personal spite, or other improper motives.”

“DEAR SIR: The expense of expressing the State school moneys from Sacramento should, of course, not be borne by the County Treasurer. It ought to be allowed by the supervisors, and paid out of the general fund, as any other expenses of his office are paid. There is no rule governing in the matter, however; custom varying in different counties. It should not be paid from the State fund; for to do so would cause a discrepancy between the amount paid to the county, as shown by the books in the Controller's office, and that received, as shown by the books of the County Treasurer. If it must be paid from the school funds, let it be paid from the unapportioned county fund.”

When shall the convention of superintendents be held? Some have suggested November, because time would be afforded for the formulating of such amendments to the school law as should be agreed upon, for presentation to the Legislature. Others favor holding it in January, immediately after the adjournment of the session of the State Teachers' Association, thus affording an opportunity for all the superintendents in the State to attend the meeting of the association; giving to the convention the advantage of the interchange of ideas had at the meeting, and yet leave sufficient time to make any presentation to the Legislature by the time that body shall get fairly down to work. We should be glad to hear from county and city superintendents upon this subject.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

THE PLANETS IN SEPTEMBER.—*Mercury* is a morning star, rising before the sun until the 18th, when he rises at about the time of sunrise. He sets at sunset on the 10th, and at 5 h. 55 m. on the 27th. He is near the moon on the 3rd, in superior conjunction with the sun on the 17th, and near Mars on the 28th. *Venus* is an evening star, setting on the 7th at 6 h. 55 m. P. M.; at 6 h. 43 min. P. M. on the 17th, and on the 27th at 6 h. 21 m. P. M. She is near the moon on the 6th, and near Mars on the 7th. *Mars* sets on the 7th at 7 h. 14 m. P. M.; on the 17th, at 6 h. 35 m. P. M., and on the 27th at 6 h. 6 m. P. M. He is due south on the 1st, and near the moon on the 6th. *Jupiter* rises on the 6th at 7 h. 42 m. P. M.; on the 17th at 6 h. 54 m. P. M., and on the 27th at 6 h. 13 m. P. M. He is due south on the 1st at 2 h. 29 m. A. M., and near the moon on the 20th. *Saturn* rises on the 6th at 8 h. 9 m. P. M., or 1 h. 37 m. after sunset, which interval gradually decreases 1 h. 9 m. by the 16th, and to 54 m. by the 26th. He is near the moon on the 21st.

MARBLE soon molds into dust of carbonate of lime, but hard, well-burnt clay endures forever in the ancient landmarks of mankind.

SIR WILLIAM FOTHERGILL COOK, the celebrated electrician, who died recently in England, claimed to be the inventor of the electric telegraph, in conjunction with Sir Charles Wheatstone, in 1836.

ON the French Eastern railway Achard electric brakes are being tried, and are said to work satisfactorily. The electricity is not supplied by ordinary cells, but by Plante's accumulating battery.—*Nature*.

THE number of persons who die from small-pox is increasing in Paris. Statistics prove that 858 died in 1879, and not less than 1,038 in the first four months of 1880. This circumstance has created a great impression, and Dr. Liouville, in the Chamber of Deputies, has proposed a law to render vaccination compulsory. It has been reported upon favorably by the committee, and will accordingly, in all probability, soon become a law.—*Nature*.

THE discovery of the archæological remains on the banks of the Trubesh river, in Poltava, Russia, is of great scientific interest. A large number of stone arrows and knives, besides pieces of coal, bones, fragments of earthenware, and bronze implements, have been dug up from beneath the recent deposit of sand. This is the first instance of the finding of any remains of the stone and bronze period in Southern Russia.

IN a French medical paper Dr. Leaderich highly recommends the treatment of sea-sickness with collodion. This has been the means of warding it off from many who were peculiarly disposed to suffer from it, and who had suffered much before. The collodion is applied with a brush in three successive layers on the epigastric region, over the stomach and the neighboring parts. It acts in such cases in the same way as in those of peritonitis, where it is a powerful anti-emetic.

DR. LANDERER, a Hungarian naturalist, writes from Athens that a dead African eagle (*Gypactes barbatus*) was lately found at Maina, on the southern Greek coast. On examining the bird, an iron-headed arrow, over a foot long, was found transfixed under one of the wings. Evidently the eagle had been fired at and struck in Africa, by some native, and had borne the arrow in its body in its flight over the Mediterranean, until it fell dead from exhaustion on touching land at Maina.

OAK may be dyed so as to resemble ebony by soaking it for forty-eight hours in a hot saturated decoction of one part Campeachy wood in eleven parts of water. This decoction should be first filtered and slowly boiled down to one-half its volume, when ten to fifteen drops of neutral indigo tincture should be added to every quart. After the application of this solution, the wood should be rubbed with a saturated solution of verdigris in acetic acid. The operation is to be repeated until the desired tint is obtained.—*Der Techniker*.

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

Mr. Joseph O'Connor, principal of Washington Grammar School, contributes the solution of Problem 29:

$$\frac{3x+\sqrt{y}}{3x-\sqrt{y}} - \frac{3x-\sqrt{y}}{3x+\sqrt{y}} = \frac{3}{2} \quad (1. \text{ transposed.})$$

$$3x+y=34-6\sqrt{3x+y+6} \quad (2.)$$

It will be seen that the left member of (1.) is the difference of two reciprocals; therefore,

If $p = \frac{3x+\sqrt{y}}{3x-\sqrt{y}}$, $\frac{1}{p}$ will equal $\frac{3x-\sqrt{y}}{3x+\sqrt{y}}$. Substituting these values,

$$p - \frac{1}{p} = \frac{3}{2},$$

$$p^2 - \frac{3p}{2} = 1$$

$$p - \frac{3}{4} = \pm \sqrt{\frac{25}{16}}$$

$$p = 2 \text{ or } -\frac{1}{2};$$

And since $\frac{3x+\sqrt{y}}{3x-\sqrt{y}} = 2,$

$$(3x + \sqrt{y}) - (3x - \sqrt{y}) = 3x - \sqrt{y}, \text{ or,}$$

$$2\sqrt{y} = 3x - \sqrt{y}$$

$$3\sqrt{y} = 3x$$

$$x = \sqrt{y}, \text{ and } x^2 = y$$

Adding 6 to both sides of (2.), and transposing, we get

$$3x + y + 6 + 6\sqrt{3x + y + 6} = 40$$

$$\text{Let } z = \sqrt{3x + y + 6}$$

$$z^2 = 3x + y + 6$$

$$\text{then } z^2 + 6z = 40$$

$$z + 3 = \pm \sqrt{49}$$

$$z = 4 \text{ or } -10$$

And, since $x^2 = y$, substituting in (2.) we get

$$x^2 + 3x = 34 - 24 = 10$$

$$x^2 + 3x = 10$$

$$x + \frac{3}{2} = \pm \sqrt{\frac{49}{4}}$$

$$x = 2, \text{ or } -5$$

And since $x^2 = y$, $y = 4$, or 25

PROBLEM 32.—To divide $\frac{8}{6}$ into two fractions, such that the sum of their numerators shall be equal to the sum of their denominators.

By the condition of the problem there will be two independent equations; but as it contains three unknown quantities, it can only be solved by the principles of the Diophantine Analysis.

$$\text{Equation of 1st condition } \frac{x}{5} + \frac{y}{5v} = \frac{8}{5} \quad (1.)$$

$$\text{" 2nd " } x + y = 5 + 5v \quad (2.)$$

It is evident that the denominator of one fraction will be 5, and that of the other will be some multiple of 5.

Clearing equation (1.) of fractions and transposing,

$$y = 8v - vx \quad (3.)$$

$$\text{From equation (2.) } y = 5 + 5v - x \quad (4.)$$

Equating (3.) and (4.) and transposing

$$v(x - 3) = x - 5 \quad (5.)$$

$$v = \frac{x - 5}{x - 3} = 1 + \frac{-2}{x - 3} \quad (6.)$$

As v represents an integer the fractional part of its value, $\frac{-2}{x - 3}$ or $\frac{2}{3 - x}$ must be also equal to some entire number. Let a be this number, and we have

$$\frac{a = 2}{3 - x} \text{ or } 3a - ax = 2, \text{ or } ax = 3a - 2 \quad (7.)$$

$$x = \frac{3a - 2}{a} = 3 - \frac{2}{a} \quad (8.)$$

As x is equal to an entire number, the fraction $\frac{2}{a}$ is also equal to an integer; hence a must be an even number, and can only equal 2 and 4; for if a be placed equal to 6, x would become zero; or, if it be placed equal to a number greater than 6, x would become negative, but by the condition of the problem, it must be positive.

Let $a=2$, then x will equal 2, (Eq. 8.) and v will equal 3, (Eq. 5.) and y will equal 18, (Eq. 4.)

$$\text{Verification, } \frac{2}{5} + \frac{18}{15} = \frac{8}{5} \quad (\text{Eq. 1.})$$

$$2 + 18 = 5 + 15 \quad (\text{Eq. 2.})$$

Let $a=4$, then x will equal 1 (Eq. 8.) v will equal 2 (Eq. 6.) and y will equal 14 (Eq. 4.)

$$\text{Verification, } \frac{1}{5} + \frac{14}{10} = \frac{8}{5} \quad (\text{Eq. 1.})$$

$$1 + 14 = 5 + 10 \quad (\text{Eq. 2.})$$

Other solutions, I think, are not possible.

Miss Fannie Lichtenburg sends the usual solution with two unknown quantities:

PROBLEM 32.—Divide $\frac{8}{5}$ into two such parts that the sum of the numerators will equal the sum of the denominators.

$$\text{Assume } \frac{x}{y} \text{ to be 1 fraction required.} \quad (a.)$$

$$\text{Then } \frac{8-x}{5-y} = \text{the other.} \quad (b.)$$

Performing subtraction ($b.$), we have as one of the fractions, $\frac{8y-5x}{5y}$

and also $\frac{x}{y}$ for the other fraction.

$$\text{Equation (1) is } \frac{8}{5} = \frac{x}{y} + \frac{8y-5x}{5y}$$

$$\text{Equation (2) is } 8y - 5x + x = 5y + y.$$

(Sum of num.) (Sum of den.)

$$\text{Combining (2), } 8y - 4x = 6y \quad (3.)$$

$$\text{Transposing and uniting } 2y = 4x \quad (4.)$$

$$y = 2x \quad (5.)$$

Substituting value of y in equation (1), we have

$$\frac{8}{5} = \frac{x}{2x} + \frac{16x-5x}{10x} \quad \text{or} \quad \frac{8}{5} = \frac{x}{2x} + \frac{11x}{10x}$$

$$\frac{8}{5} = \frac{1}{2} + \frac{11}{10} \quad \text{Ans. } \left. \begin{array}{l} 1 + 11 = 12 \\ 2 + 10 = 12 \end{array} \right\} \text{Proof.}$$

DIVISION BY A FRACTION.*

BY EBENEZER KNOWLTON.

A FRACTION is one or more equal parts. To express it takes two numbers. One shows how many of these equal parts make a whole. And since this number gives name, or denomination to the parts, we call it the namer, or the denominator. The other shows how many of the equal parts make the fraction. And, because this number numbers the equal parts in the fraction, we call it the numberer, or numerator.

A fraction, then, is not, or does not represent, one single quantity, as common number does. It represents an operation, or rather, the result of *two* operations—a division and a multiplication. That is, we have used one number—the one which we call the denominator—as the divisor of some unit; and the other, the numerator, as the multiplier of the result obtained by the first operation.

But this is not all. Every proper fraction also indicates an operation which cannot be performed. It stands for an *undoable division*. Two-thirds, for example, is not only two times one-third of one; it is also one-third of two, which is two times one. In the first case the division is done first; in the second case last.

A fraction, then, is not a single, simple number. It is an indicated operation; the statement of an unsolved—in fact, an unsolvable—problem.

In this fact lies the great difficulty which we all meet in trying to teach children the real “why and wherefore” of what we call division by a fraction. One may fairly doubt, indeed, whether the majority of teachers ever thoroughly learn it or teach it to themselves. We readily learn and teach the “how” of it. Nothing is easier than to say, “Invert the divisor, then multiply.” Any average child can learn that easily, and do it certainly. But when he asks, “*Why* do we invert the divisor and then multiply?” he gets no satisfaction, for the simple reason that we cannot teach what we have not learned. We try to hide our own ignorance by smothering him under words without sense; or, worse than that, we sharply shut him up for the very thing we ought to encourage and gratify.

He goes on: “I know *that* we do it, but I do n’t know *why*. We don’t do what we undertook. We set in to *divide* by one fraction, and here you and the book tell me to go to work and *multiply* by *another* fraction. Why does standing a divisor on its head make a multiplier of it? We *call* it a problem in *division*, and then we don’t *divide* at all; we go right at work and multiply. That’s a funny way to do. You might as well call black white, as to call multiplication division. I do n’t understand it at all. It seems perfectly absurd.”

Now, teacher, what are you going to do with such a boy? He comes to you for bread. Have you only a stone to give him? Will you talk to him of

“reciprocals” and “equivalences”? Will you stagger him with polysyllables, and floor him with mathematical incomprehensibilities?

If nothing better occurs to you, try something like this:

“Fred, divide 4 by 4.” “One.”

“By 2.” “Two.”

“By 1.” “Four.”

“That’s right. No trouble there, certainly. Now, as you keep using smaller divisors, what do you notice about the quotients?”

“Why, they keep growing larger.”

“Certainly. Do you remember the general fact, or law,—the *principle*, the book calls it—of such divisions?”

“Yes, ma’am. The smaller the divisor the larger the quotient.”

“That’s it. Well, now, if your divisor is 1, what is the quotient?”

“The quotient is the number itself. Dividing a number by one does n’t change it at all.”

“Very true. Now, how does $\frac{1}{2}$ compare with 1, in size?”

“It is half as large.”

“That’s true. Can you say the same thing the other way?”

“It is twice as small.”

“Yes; that’s what I meant. Then if dividing by 1 gives the number itself, and $\frac{1}{2}$ is twice as small as 1, what must be the quotient when we divide by $\frac{1}{2}$?”

“Oh, I see. It must be twice as large. Yes, if dividing by 1 gives the number itself, dividing by $\frac{1}{2}$, which is twice as small as 1, must give twice the number which we divide.”

“Well, what is the only way, in written arithmetic, to make any number twice as large?”

“Why, multiply by 2, of course.”

“Certainly. Now go back to the fraction which we undertook to divide by, and tell me what the 2 was in that fraction.”

“It was the denominator.”

“Then, what is the only way, in written arithmetic, to show to the eye the result which your reasoning, or thinking, has shown to the mind?”

“To multiply the dividend by the denominator of the divisor.”

“Very good. Now, do you see why we turn the fraction over—why we make the numerator and the denominator of our divisor change places—why we *invert* the divisor, as the rule says?”

“Yes; I think I do.”

“Well, try half a dozen more problems. Take for a dividend any whole number you please, and divide it first by $\frac{1}{2}$, then by $\frac{1}{3}$, then by $\frac{1}{4}$, then by 1-5, and so on. When you have done that, and reviewed it often enough, you will understand the first case in division by a fraction. The first case is when the dividend is any whole number, and the divisor is any simple fraction having 1 for its numerator. The second case is when the dividend is a whole number, and the divisor is any simple fraction, no matter what the numerator may be. We’ll talk about that next time. You have answered very well to-day. I think

you begin to understand the first case, so that after this, you will not only understand the 'how,' but will also know something about the 'why.' Only be careful not to think you thoroughly know it, because you begin to see it just now. You must go over it several times before you will fix and fasten it so that it cannot get away. Be sure you do that. When you prove to me that you *have* done it, we'll try the next case. That's all to-day."

THE C. L. S. C.

This department is under the editorial charge of MISS L. M. WASHBURN, San Jose, to whom all communications relating thereto must be addressed.

THE CHAUTAUQUA LITERARY AND SCIENTIFIC CIRCLE.

QUESTIONS are constantly asked about the work of this new society. Its aims and methods, briefly stated, are these:

The organization attempts to promote habits of systematic reading and study, and to guide the student through a carefully selected course of reading in science, secular and sacred history and literature, and other subjects. This course of reading covers four years, requiring about an hour each day during nine months of the year. Supplemental special studies can be carried on during or after the general course.

Studies in those lines is encouraged by written and printed correspondence with the individual members, by "local circles" for mutual help and stimulus, and by courses of lectures at an annual sea-side assembly.

Hints for study are sent to the student, and small outline text-books have been prepared to assist him in classifying and remembering what he reads. Memoranda of work done (not formal examinations) are made out by each member on blanks furnished him; and thoughtful reading during the four years, thus evidenced, is recognized by a diploma. By these means, and by the sense of comradeship, encouragement is given to lonely students, who without it would perhaps become disheartened or puzzled in the effort for self-culture. Members gain a double benefit if they can belong to a local circle, and attend the summer assembly.

"Local circles" vary in character according to the number of members. They may consist simply of two or more persons reading together and conversing on the subject of study; while the large organizations of some of our cities contribute to the general interest by lectures, essays, class instructions, and other varied exercises.

The Annual Assembly, or Summer School of Science and Literature, is described in the succeeding article of this journal.

The remarkable growth of the society shows that it meets a want, and is likely to be a growing power. Between fifteen and twenty thousand members form the main society, organized but two years ago at the famous "Chautauqua," New York, of which the JOURNAL will try to give its readers some idea in a future article. The California Branch, at the end of its first year, numbered about seven hundred members. The second year's course of study commences Oct. 1st., and fresh circles are forming, and individual members coming in, to be ready, with their books, for a prompt beginning. Applications for membership and requests for circulars giving fuller information, should be addressed to the Secretary, Miss L. M. Washburn, San José, Cal.

THE SUMMER SCIENCE SCHOOL.

CALIFORNIA has at last a Summer School of Science and Literature. This new educational feature, of so much interest, is under the auspices of the California Branch of the Chautauqua Literary and Scientific Circle, an organization which in a single year's time has made itself felt as a power.

Pacific Grove, Monterey, was selected as the place for the assembly, on account of its rare facilities for the study of the life of the sea-coast, and also for its beauty, convenience of access, and opportunities for camp-life. Here, during July, was spent a bright, busy fortnight, delightful in itself, and full of promise for the future.

The morning session of three hours was devoted to science. Afternoons were left free for excursions and gathering specimens, until the second week, when another hour was seized for lectures and classes. The lectures of the evening were connected with the literary, historical, and Biblical studies pursued by the society during the preceding year.

We were fortunate in our instructors. The lectures on Zoölogical Biology, by Dr. J. H. Wythe, of Oakland, were as fascinating as the rock-pool aquaria in which we could watch the lower orders of life that he described—bristling echinoids, sprawling star-fish, or flower-like sea-anemones. Dr. Wythe's magnificent microscope was the treasure of the session, giving us glimpses into a new world. So fine an instrument is rare indeed.

Dr. C. L. Anderson, of Santa Cruz, who lectured to us on Marine Botany, is known to all California botanists as authority on Pacific Coast algæ. Monterey sea-mosses are particularly fine. Collectors who had sought them for their beauty, despairing of scientific acquaintance with them in the dearth of treatises on their classification, were eager to learn from one who has made their study a specialty. Happy were the beach excursionists who could have the Doctor for a leader. "Low tide" had for them a stronger call than breakfast. Dr. Anderson's lectures were illustrated not only by fresh material from the beach, but by specimens from his own extensive collections of algæ.

The course in general Botany was designed mainly for those not sufficiently advanced in that study to devote themselves to its special branches. But its able and attractive presentation by Miss M. E. B. Norton, of the State Normal School, drew together those to whom it was no new study. Besides the lectures in the auditorium, a class could be found every day busy analyzing the land plants of the coast, or delving into the treasures their teachers had brought. Miss Norton was heard to say, as she stood in the door of her charming tent, that she "liked this Arab life." "What Arab tent," laughed the listener, "has blackboards, botanical treatises, and herbaria for its furniture, and drying plants for its decorations?"

Economical Botany had in Mr. W. A. Sanders, of Fresno, an expositor whose lectures were so attractive and profitable, that the audience was continually begging for more. Perhaps the most interesting of his addresses was that on insuring the growth of plants from cuttings. Others were on the food plants of the world, and the success attained in their cultivation in California. The audience insisted on an extra lecture about raisin culture, which Mr. Sanders has made a special study, both on his own farm and in the vineyards of Spain.

No lectures were more eagerly attended than the course on Astronomy, by Prof. More, of the State Normal School. The members of the society were the better prepared, by their previous study of the subject during the year, to make the most of the lectures. The professor was plied with knotty points, which had been found puzzling; while all enjoyed to the full that clear presentation which makes astronomy not formidable but fascinating.

Prof. Norton, of the State Normal School, was radiant with satisfaction at the success of the science school which he had so large a share in planning. His own lectures, he insisted, should "fill in the chinks," instead of forming a course. They were mostly on animal and vegetable parasites, and on the conditions of healthy living. Prof. Norton, with his wide acquaintance among the teachers of the State, recognizes fully the inspiration which they may draw from such an annual gathering of earnest workers in the field of science.

The term "lectures" seems too formal for the varied instruction of our morning sessions, broken freely by question and answer, as in a pleasant classroom. The wind blowing through the dropped curtains of the great tent was scarcely more free. In our rough camp-clothing, strong shoes, wide-brimmed hats, we made a most unconventional audience. The sound of the surf and pines mingled with the lecturers' voices. It is the best compliment to the speakers that they held us from the rocks and waves which beckoned to us only a few rods away.

There is space only to name the lecturers of the evening and their subjects. Prof. Martin, of the University of the Pacific, treated of the Greek Language and Literature. The opening address by Rev. Dr. Dwinell, of Sacramento, was on the theme, The Rejection of Truth destroying the Power of its Recognition. Rev. G. S. Anthony, of Oakland, discussed Paul's Casuistry. Rev. C. W. Anthony, of San Francisco, The Relation of Science, Experience, and Revelation. Our English historical studies made us appreciate more fully

addresses on three great leaders—Wycliffe, Tyndale, and Oliver Cromwell—the first two by Rev. H. H. Rice, of Sacramento; the last by Rev. Dr. M. C. Briggs, of San Francisco. An interesting chapter of local American history was contained in the address by Rev. Dr. Willey, of Santa Cruz, on the Men of Monterey in '49. A grand sermon by Bishop Simpson was enjoyed, not only by the members of the assembly, but by many others who came expressly to hear the great preacher. Our president, Rev. Dr. Stratton, besides giving two lectures on his chosen theme, "The Bible and its Contemporaries," was everywhere brightening the convention by his genial and efficient leadership.

After the evening lectures, groups might sometimes be seen wending their way to convenient headlands for tracing constellations under Prof. More's guidance; merry parties gathered around the fire for story and jest; serenaders strolled along the shore; while those who were filled with ardor for early excursions in search of beach or rock treasures, prudently blew out their candles and addressed themselves to sleep. In the unconventional camp life many pleasant acquaintanceships were begun or renewed. Pacific Grove gives a camp flavor to everything. Tents and rooms in cottages are rented to those who prefer taking their meals at the restaurant, while the true camper bustles about his cooking-stove with a sense of independence. To Mr. Jacks, long the owner and still the manager of the grounds, the assembly owes warm thanks for his interest in the success of the enterprise, shown not in words only, but in deeds.

More advanced and systematic work is planned for next year. We look forward to more division into classes, with careful work by students. There is a prospect that a section in microscope work may be conducted by Dr. Wythe. As Biology is one of the studies of the C. L. S. C. course the coming year, the members will be prepared in that subject for more advanced lectures. Dr. Wythe is the author of our text-book, and it will be a special pleasure to have him for our teacher. In Botany, as well as Zoology, students will come prepared for making collections, and for exchanging with each other. Some will remain for this purpose a longer time than the session.

It was pleasant to meet so many teachers at the assembly. Indeed, both the summer school and the regular home reading of the C. L. S. C. appeal especially to the scattered teachers of our State. The society offers that sense of comradeship we so much need. The teacher in a lonely mountain district, as he struggles against stagnation, knows how difficult it is after the nervous exhaustion of the day, to keep up the systematic reading he had planned for himself. Here comes the Chautauqua Circle with its definite yet flexible course—an hour each day in line with thousands of fellow-students, or suggestions for more extended work. And teachers are just the ones to rouse in others interest in this plan for self-culture. It may help the teacher to implant in some of his older pupils that taste for solid, systematic reading, which is one of the teacher's best gifts to his scholars, and place these young people under influences which will sustain their interest after the teacher is gone. And there are in every town people who would enjoy and profit by the stimulus of a society once organized. We hope not only to see lonely students gaining the

help they need, but also strong local circles springing up all over the State. The methods and work of the society are described in another article in this journal.

NEWS RECORD.

OUR record closes on July 24th.

Foreign and Domestic.

Cholera is raging in Roumania.

Ole Bull, the violinist, is dead.

Adelaide Neilson, the actress, died in Paris in August.

General Gonzales has been elected President of the Mexican Republic.

An overflow of the river Proma, in Germany, is doing great damage.

A volcano is reported in active operation about forty miles from Los Angeles.

William Henry Giles Kingston, the English writer of books for boys, is dead.

A formidable strike is in progress in Scotland.

Further reports of rioting in Ireland are received.

A general rising is reported from several Mexican States.

The National Council of the Albanian League has decided to throw off every vestige of Ottoman authority.

General Neal Dow accepts the nomination for the Presidency by the National Prohibitory Party.

Mr. Gladstone, who has been seriously ill, has completely recovered. He is now seventy-three years old.

Four thousand more Americans visited Europe this season than last—the total being 20,000.

Great famine is feared in Silesia, Posen and East and West Prussia, owing to floods and bad harvests.

The national campaign has fairly opened East, and in San Francisco. In a few weeks the political pot will boil all over the Union.

Dr. Tanner, of New York, successfully finished his forty-days' fast. His first meal, immediately on the expiration of the forty days, was a cup of milk and three or four large pieces of watermelon.

Personal.

Prof. A. H. McDonald, late of Sacramento, is now in this city, representing the interests of the *Record-Union*—one of the ablest journals on the Coast.

Mr. Budd Smith, a forty-niner, and one of our harbor pilots, is the inventor of a road-carriage propelled by *walking motion*. By an ingenious mechanical contrivance a child of twelve years can manage it, and furnish the motive power to carry two or more persons, over ordinary wagon roads, with less effort than is required for the bicycle.

Mr. Bret Harte has been passing a few weeks with Mr. Froude at his Devonshire home, and is said to be at work on a novel of English life in that shire.

Julian Hawthorne has obtained a United States Consulate in Japan.

Oliver Wendell Holmes has received the honorary degree of Doctor of Laws from Harvard College.

Mr. George Bancroft began fifty years ago last month his "History of the United States," and, it is said, expects to celebrate its completion at his Newport country home early in the fall.

Prof. H. M. Paul, of the Naval Observatory at Washington, has gone to Japan to become professor of astronomy in the University of Tokio.

Americans have contributed handsomely to the fund for a memorial window to Sir Walter Raleigh, that is to be placed in Canon Farrar's church, St. Margaret's, Westminster.

Educational.

A school-master in the southern part of the State has half a dozen switches of various sizes, and names to correspond. "Bulldozer" and "Lightning" are for the older offenders, and "Bumblebee" and "Tickler" for little sinners.

An interesting session of the New York State Teachers' Association was held at Canandaigua in that State, about the 1st of August.

A mechanical training school for boys is about to be started in Chicago. It will be called the "Chicago Technic School Shop." Tuition will be \$60 per annum.

The principal of the New York City Normal School gets \$6,000 a year; the chief professor, \$4,000 a year. What do California Boards of Education think of that?

Virginia has now two summer normal schools—one at the University and one for colored teachers at Lynchburg—and appropriates \$500 annually for the Institute at Hampton. North Carolina supports a six weeks' normal school for white teachers, and a yearly one for colored. South Carolina has none, but sends some pupils on Peabody scholarships to Hampton. Georgia has a normal department in the University of Atlanta, and sends twenty pupils to the Normal College at Nashville. Florida also sends pupils to the Normal College at Nashville. Alabama has one for white and two for colored. Mississippi has none; Louisiana has two; Arkansas, two; and Texas, though late in the field, has just provided by law for two. West Virginia nominally has six, but they are neglected; while in Tennessee is the widely known Normal College, supported chiefly by the Peabody Fund.

General Notes.

The Mechanics' Fair in this city will close the 11th inst. In many respects it is superior to its predecessors, and is attracting crowds of visitors. Our space precludes a detailed description of the exhibits. Those who can do so should not fail to spend a day or more at the pavilion.

A night medical service has been established in New York, by which arrangement any person taken suddenly ill, whether a stranger or resident, rich or poor, may receive the attention of a competent physician. A list of physicians willing to answer night calls will be deposited at the station-house of each precinct, and the police, when requested, will summon one of them. If the patient is able to pay for the service, he will be expected to do so; if unable, the city becomes responsible for the doctor's fee.

Professor H. C. Spaulding, of Boston, is about to make a gigantic experiment at Holyoke, Massachusetts. He is to build a tower, if his purposes are carried out, one hundred and seventy-five feet in height, having a lantern supplied with an electric apparatus capable of producing a light of three hundred thousand candle-power, or thirty times as strong as any ever before attempted. The Water-power Company have given permission to use a wheel generating one hundred and fifty horse-power, and the idea is so to illuminate the atmosphere just over the town that the reflected radiance will enter the houses like daylight.—*Bazar*.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SAN FRANCISCO COUNTY.

From Supt. Taylor's timely and well-advised circular to class teachers, we clip the following paragraph, which contains the gist of its sentiment, and should be read by every person intrusted with the care and training of youth:

"Let your constant study be to instill into the minds of the children under your care this manifest truth: Employment leads to happiness, indolence to misery. Teach them that the men and women who do the most good in the world are those who work;

they are the persons who keep the wheels of industry moving and supply the necessities of mankind. Teach them that to be idle is a disgrace—to labor is honorable. Teach them that they are being educated, not that they may escape labor, but that they may labor intelligently; that education does not relieve them from the duties and labors of life, but makes their duties more apparent, and their labors less burdensome. If you pursue this course, you will find that the children will take a lively interest in these subjects, and your efforts blessed with good results."

AMADOR COUNTY.

The Jackson school will open Sept. 6th, with Prof. R. E. Corinne—a teacher of successful experience—late of Lancha Plana, as principal; Mrs. Addie Sharp and Miss Frances Harris, assistants.

DEL NORTE COUNTY.

The steamship *Senator*, which sailed from San Francisco on the 27th ult., carried Prof. H. H. Heath—one of the most successful of teachers—to assume the principalship of the Crescent City schools. Mr. A. A. D'Ancona, a promising and enthusiastic young teacher, and Miss Lizzie Brady, a graduate of the Massachusetts State Normal, went at the same time to take charge of the school at Smith River.

HUMBOLDT COUNTY.

The Ferndale *Enterprise* of the 20th ult. says: "We congratulate our friends at Coffee Creek, upon securing the services of Mr. Fred. Stowell, of San Pablo, as teacher of their school. Mr. S. is a live teacher, and comes highly recommended."

LOS ANGELES COUNTY.

Ex Supt. Kimball of the Los Angeles city schools, is rusticated at the San Juan Hot Springs, for the benefit of his health.

Anaheim schools opened August 16th, with a full attendance.

A course of study for the schools of the county has been prepared by the County Board of Education. It is divided into four grades in the primary and four in the grammar school. The completion of the Fourth Reader, Robinson's Rudiments of Arithmetic, and Harper's Introductory Geography, is the limit of the primary school course. In addition the studies required by the School Law, natural philosophy, algebra, zoölogy, English and American literature, and the elements of political economy, have been included in the advanced grades of the grammar school course. Diplomas of graduation will be given to all who complete the course.

Ex Supt. McDonald is principal of the Downey school.

The Santa Ana Valley Teachers' Association meets alternately at Anaheim and Santa Ana the last Saturday of every month. The programmes of exercises are interesting, and the members of the association enthusiastic in their work.

Prof. Geo. C. Hall has charge of the Santa Monica school.

Mrs. C. B. Jones is the successor of Prof. C. H. Kimball, as superintendent of the Los Angeles city schools.

MARIN COUNTY.

Prof. T. P. Powers has been so crowded in his school at Saucelito, that the trustees have built an addition to the building, and will employ an assistant teacher.

NEVADA COUNTY.

Prof. Crowell continues in charge of the Rough and Ready school, assisted by his excellent lady. Under their able management, this is one of the best schools in the county.

The Indian Spa school will be taught by Mr. Powers, late of Sheridan.

Prof. Brock, a thoroughly competent young man, is teaching at Spenceville.

Ex-Superintendent Robinson teaches at Chalk Bluff.

SANTA BARBARA COUNTY.

Prof. B. F. Whittemore, late of Watsonville, has begun his work as principal of the Lompoc schools under most favorable auspices. He is an educator fully up to the times, and under his able tuition, our friends of Lompoc may look forward to a bright future for their school.

The Artesia school is in charge of Miss Mayhew, who is giving good satisfaction.

SAN BERNARDINO COUNTY.

The Sisters of Charity are about opening their new school at Colton.

In San Bernardino city the corps of teachers consist of principal H. C. Brooke, Miss Nellie Livingstone, Miss Katie McDonald, Mrs. R. H. Curtiss, Miss Lizzie Wagner.

SAN MATEO COUNTY.

The Pescadero school began Aug. 2, with Prof. W. B. Turner and Miss Ada Jacobs as teachers.

SOLANO COUNTY.

Benicia is to have a new public school-house, and is laudably ambitious that it shall be one of the best in the State.

SONOMA COUNTY.

Mr. G. N. Sanborn is teaching at Occidental.

Miss Sallie Bledsoe is teaching the Mill Creek school.

The Healdsburg schools open with A. C. Bennett principal, D. C. Clark vice-principal, Miss Mary Phelps, Miss Cassie McGrew, Miss Mary O'Connor, Mesdames L. M. Allen and C. F. Raymond.

Prof. Heber Thompson will teach the Oak Grove school next session.

Mound University, Litton Springs, reopened August 2, with Prof. J. A. Gamble as principal. Prof. Gamble is well-known as the able and successful principal of the University Mound College.

SAN DIEGO COUNTY.

The trustees at San Louis Rey have been fortunate in the engagement of Miss Agnes Zweybruck, an *alumnus* of the S. F. Girls' High School, who sailed on the *Ancon* on the 21st ult. We predict a pleasant and profitable school year in this district, as Miss

Z. possesses the elements of the successful teacher.

SANTA CLARA COUNTY.

There are 340 students at the Normal School, 120 of whom are new pupils.

SANTA CRUZ COUNTY.

\$1,000 has been expended on the Santa Cruz High School building this summer, in repairs on the outside.

SOLANO COUNTY.

The prospect is good for an increased attendance at the Vacaville College.

The Dixon school opened with 170 pupils, in charge of Misses Davis, Hammond, Barnes and Martin.

YOLO COUNTY.

The Woodland schools began their fall session the 16th ult.

YUBA COUNTY.

The public schools of Marysville will open Oct. 4th, with the following corps of teachers, viz.: Prof. Kelbyer, principal High School; H. C. Babcock, principal Grammar School; Intermediate—Mrs. Emma Hapgood, Miss Lizzie Runmery, and Mrs. E. A. Coult; Primary—Miss Sadie Subers, Miss Ida Atchison, Miss Amy Davidson, Miss Anna B. Karr, Miss Eva Burt, and Miss M. E. Ketchum.

NEVADA.

HENRY F. BAKER, Editor, Virginia City.

The schools generally will reopen for the fall term Sept. 6th.

Prof. T. B. Gray, of Virginia, has received the appointment to the principalship of the Third Ward Grammar School, in the same city.

Teachers in Virginia have had to stand another cut in salaries. Fourth and third primary teachers now receive but \$80 a month. With one exception, the highest salary paid to lady teachers is \$100. The teaching force was also reduced

Prof. A. H. Willis, of Virginia, is decidedly opposed to the half-day system in primary schools. He pronounces it a failure in Virginia.

The recent examination of teachers at Virginia was conducted by County Supt. Young, H. B. Loomis and Evan Williams. Let it be recorded as the fairest examination ever held in Storey County.

At a recent meeting of the Board of Trustees of the Silver City school, the wages of teachers were reduced as follows: Principal

to \$140; intermediate teacher to \$85, and teacher of primary department \$70. Prof. Van Wageningen was elected to the principalship, and Mrs. Leftwick first assistant.

Gold Hill people do not like the half-day system. The Gold Hill schools open 1st inst., and those of Virginia City, 6th.

Bishop Whitaker's school for girls, at Reno, opens under most favorable auspices, with an able corps of teachers.

The schools at Dayton, Nev., are under the charge of Prof. J. E. Bray, assisted by Miss Minnie Leslie. They have eighty-six pupils.

OREGON.

Mr. Lang's school at Sumner was brought to a close owing to the prevalence of whooping cough.

Miss Jessie is teaching at Big Prairie.

J. P. Feaster has a large writing-class at Pendleton.

WASHINGTON TER.

Miss Mary Cook is teaching at Four Lakes.

The University of Washington Territory, at Seattle, begins its session 1st inst. They have a new building costing over \$35,000, and closed last term with 160 students and a corps of eleven teachers and tutors.

Rev. Mr. Wells of Walla Walla reports his ladies' seminary at that place in a more flourishing condition than at any period since he began his work there over ten years ago.

EXAMINATION OF TEACHERS IN CITY OF SAN FRANCISCO, JULY 20 TO 24, 1880.*

Mental Arithmetic.

1. If $\frac{2}{3}$ of an apple cost 2 cents, what will $2\frac{1}{2}$ apples cost? 2 credits.
2. How many car-tickets at $6\frac{1}{4}$ cents apiece can be bought for \$2.50? 2 credits.
3. If the interest on \$44 for 1 year is \$4, what is the rate per cent.? 2 credits.
4. If a man paid \$120 for a wagon, and sold it at a gain of 30 per cent., how much was his gain? 2 credits.
5. What would 25-100 of a bushel of potatoes cost at 25-100 of a dollar per bushel? 2 credits.
6. A man being asked at what per cent. his money was on interest, replies: "I receive \$120 in 10 years for \$240." What was his rate per cent.? 2 credits.
7. In what time will \$275 at 10 per cent give \$275 interest (simple interest)? 2 credits.
8. What will $\frac{3}{4}$ of 12 lbs. of coffee cost at 13 cents per lb? 2 credits.
9. What per cent. of \$600 is \$120. 2 credits.

10. What will 20 books cost, if 13 cost \$3.90? 2 credits.
11. How many cubic yards of earth have been excavated from a cellar 9 ft. deep, 9 ft. long and 12 ft. wide? 3 credits.
12. Bought 5 yds. of ribbon at $12\frac{1}{2}$ cts. per yard, 3 books at $37\frac{1}{2}$ cts. each. I handed the merchant \$2.50. How much change should he have given me? 3 credits.
13. How much will a gallon of wine cost, if 7 gills cost 21 cents? 3 credits.
14. The interest on \$960 for 5 years was equal to $\frac{1}{2}$ of the principal. How much was the yearly interest? 3 credits.
15. If 7 men can perform a certain piece of work in 13 days, in how many days can 21 men do the same work? 3 credits.
16. A barrel of pork cost \$12 and was sold for \$11. What was the loss per cent? 3 credits.
17. How many square yards of wall-paper will it take to cover a cubical block containing 27 cubic ft.? 3 credits.

* We publish in part, this month, the questions used at the recent examination for teachers' certificates, in San Francisco. We have received copies of the questions used in many counties of the State, and it is our intention to select from the various sets, and publish that we consider the best as models. This month we concluded, however, to publish the San Francisco set, not because it is the best (for it is not), but because teachers and county boards of education are naturally interested in the methods and means used in the metropolis of the Coast.—EDITOR JOURNAL.

18. What principal will in six years, at 10 per cent., simple interest, amount to \$120? 3 credits.

19. The head of a fish is 12 inches long, and $\frac{3}{4}$ of the length of the head is $3\frac{1}{5}$ the length of the body. Required the length of the fish? 3 credits.

20. 3 men hire a pasture for \$36; the first puts in 3 horses, the second, 2 horses, and the third, 4 horses. How much ought each to pay? 3 credits.

Arithmetic—First Grade.

(10 Questions, 10 Credits each.)

1. Find the G. C. D. of 459, 1224, 408, and the L. C. M. of 1, 2, 3, 4, 5, 6, 7, 8, 9.

2. Divide 5.7 by $\frac{3}{4}$, and explain the process as you would to a class.

3. The longitude of Rome is 12 deg. 27 min. E., and Boston 71 deg. 3 min. 30 sec. W. When it is 9 o'clock A. M. at Boston what is the time at Rome?

4. A merchant bought cloth at 75 cents per yard. How shall he mark it so that he may fall 10 per cent. from the marked price and still make 20 per cent. on the purchase price.

5. How long must \$750 be on interest at 8 per cent. to amount to \$956.50?

6. A note for \$2,000, dated May 23, 1880, and due in one year, with interest at 8 per cent., is discounted at a bank Dec. 8, 1880, at 10 per cent. Find the proceeds and discount (with grace).

7. If 4 men can dig a ditch 72 rods long, 5 ft. wide and 2 ft. deep, in 12 days, how many men can dig a ditch 120 rods long, 6 ft. wide and 1 ft. 6 in. deep in 9 days. (By proportion.)

8. At \$2.25 a sq. yd., what will it cost to pave a triangular court whose base is 60 ft., and altitude 42 feet?

9. A cubical box contains 4,492,125 cubic in. Find the length of one of its edges, and the diagonal of one of its faces.

10. I receive yearly \$232.50 interest on \$4,650 principal. What is the rate of interest?

Arithmetic—Second Grade.

(10 Questions, 10 Credits each.)

1. Divide 5.7 by 3.4, and explain the process as you would to a class.

2. Two hundred sixteen and thirty-seven and five-eighths hundredths, ten hundred sixty-four and six and three-fourth hundredths, twenty-seven thousand eight hundred fifty-four and five hundred and sixty-five and one-half thousandths, eight thousand and four hundred fifty-three and nine and seven sixteenths hundredths, and fifteen thousand four hundred and seventy-three

and one thousand seven hundred sixty-five hundred thousandths; from the sum subtract thirty-six thousand three hundred forty eight and two thousand eight hundred sixty-nine ten thousandths; multiply the remainder by eight hundredths, and divide the product by one and twenty-five hundredths.

3. Rome is in longitude 12 deg. 27 min. E., and Boston, 71 deg. 3 min. 30 sec. W. When it is nine o'clock A. M. at Boston, what is the time at Rome?

4. A merchant bought cloth at 75 cents per yard. How shall he mark it, so that he may fall 10 per cent. from the marked price, and still make 20 per cent. on the purchase price?

5. How much money must I invest in $4\frac{1}{2}$ per cent. bonds that I may receive an annual income of \$1,980, the bonds being at $2\frac{1}{2}$ per cent. premium?

6. Upon a note of \$6,000, dated Jan. 12, 1877, and bearing interest at 6 per cent., the following payments were made: June 21, 1878, \$150; Sept. 15, 1879, \$2,845. What was due on the note Dec. 30, 1879?

7. For what amount must my note be drawn at 90 days, without grace, that I may receive \$1,200 for it, when discounted at 9 per cent. per annum?

8. If 4 men can dig a ditch 72 rods long, 5 ft. wide and 2 ft. deep, in 12 days, how many men can dig a ditch 120 rods long, 6 ft. wide, and 1 ft. 6 in. deep, in 9 days? (Solved by proportion.)

9. A certain room is 45 ft. wide, 24 ft. high and 60 ft. long. What will it cost to plaster the room, at 25 cents per sq. yd., deducting 1,125 sq. ft. for doors and windows?

10. The capacity of a cistern is 462 cub. ft.; how many gallons of water will it contain?

Theory and Practice of Teaching.—First Grade.

(10 Credits for each Question.)

1. How would you inculcate high moral principles and patriotism?

2. Name three important hygienic topics which you would endeavor to impress upon the minds of your pupils; and two hygienic laws not embraced within the preceding topics, which you will carefully obey while you are engaged in teaching?

3. How would you teach a class of children the English language, without using a textbook on English Grammar?

4. State the order of development of the mental faculties.

5. Name two methods which are necessary to insure success in your vocation; and three ways by which you can keep pace with the progress of the times in teaching.

Theory and Practice of Teaching.—Second Grade.

(10 Credits for each Question.)

1. What is the difference between education and instruction?

2. What means would you use to awaken the observing faculties and fix the attention of the pupils?

3. Name five moral principles which you would earnestly strive to impress upon your pupils.

4. In what grade, or at what age should the study of composition be introduced into our Public Schools?

5. Name five important hygienic principles which you would endeavor to impress upon the minds of your pupils.

Spelling.

(1. 40 Words. 1 Credit each.)

- | | |
|----------------|----------------|
| 1 traceable | 21 panegyric |
| 2 sumptuary | 22 buoyant |
| 3 ecstasy | 23 erysipelas |
| 4 benefited | 24 mucilage |
| 5 malleability | 25 aquafortis |
| 6 metallurgy | 26 collieries |
| 7 spherical | 27 llama |
| 8 changeable | 28 glaciers |
| 9 judgment | 29 raspberries |
| 10 annihilate | 20 seizing |
| 11 parallelism | 31 niece |
| 12 unique | 32 shepherd |
| 13 drought | 33 righteous |
| 14 chisels | 34 guinea |
| 15 aqueduct | 35 lachrymose |
| 16 embarrass | 36 anonymous |
| 17 proselyte | 37 nausea |
| 18 chicanery | 38 conchology |
| 19 reveille | 39 parterre |
| 20 spontaneous | 40 urgent |

(2. Dictation. 10 Credits.)

Note: Take one off for every error in spelling or use of capitals.

Sir James Mackintosh wrote an excellent dissertation on metaphysical science.

From yonder realm of empyreal day.

The guillotine was first proposed to the National Assembly of France by a physician, and from him received its name.

Here sacred pomp and genial fête delight,
And solemn dance and hymeneal rite.

(3. 20 Words. 30 Credits, 1 for defining and 1/2 credit for spelling.)

- | | |
|--------------|---------------|
| 1 effeminate | 7 souvenir |
| 2 recipe | 8 flexibility |
| 3 judicial | 9 surfeit |
| 4 myth | 10 Dnieper |
| 5 panacea | 11 infinitive |
| 6 sangfroid | 12 aquatic |

- | | |
|----------------|------------------|
| 13 cavalcade | 17 heron |
| 14 rubicund | 18 allegories |
| 15 beleaguered | 19 perspicacious |
| 16 acrostic | 20 hippodrome |

(4. Word Analysis. 20 Credits.)

Define the following suffixes and prefixes. Give and define a word illustrating the use of each.

Suffixes: ible, ance, ive, hood, ize.

Prefixes: trans, ante, sub, super, hydro.

English Grammar.

1. In the following sentence, parse the italicised words: *Let there be no strife, I pray thee, between me and thee, for we are brethren.* 2 credits for each word.

2. Write a synopsis of the word "lie" (to recline) in the indicative and potential moods. 3rd. pers., sing., masc. 10 credits.

3. Write sentences containing (a) verb in the present subjunctive passive. 5 credits. (b) Verb in the past subjunctive active progressive form. 5 credits.

4. Define a participle, the passive voice, a phrase, an objective clause, case of a noun or pronoun. 2 credits each.

5. (a) Compare little, upper, first, well, next, good. 1 credit each.

(b) "Every man in the room felt their hearts moved with compassion." What is wrong in this sentence? 4 credits.

6. Name five words that may be used as different parts of speech, and illustrate by sentences. 2 credits for each word.

7. What is meant in grammar by government? By mood? 5 credits each.

8. Write a sentence in which two nominatives, connected by "and," require a verb in the singular number. 10 credits.

9. Correct the following: (a) When duties are high, everybody will smuggle if they can. 2 credits.

(b) When all men obey the Golden Rule, we will have peace on earth. 2 credits.

(c) Good friends like you and I will not quarrel. 2 credits.

(d) I expected to have found him here. 2 credits.

(e) Let this be a secret between we three. 2 credits.

10. Name and illustrate five ways in which the nominative case may be used. 2 credits for each.

(2 1/2 hours allowed for this paper.)

Music.—First Grade.

1. What are the essential properties of tone? 3 credits.

2. Write the scale of E flat on the treble staff, and the scale of A on the bass staff,

and give the pitch names of the notes in each. 7 credits.

3. Make five different kinds of notes and five rests, giving the names of the notes in each. 5 credits.

4. Write on the treble staff five measures in the key of B flat, quadruple measure, quarter variety, using notes of different kinds, and different pitch in each measure. 5 credits.

Geography.

(10 Questions, 5 Credits each.)

1. Locate the following cities, and state for what each is noted: Manchester, Lyons, Mocha, Havana and Brussels.

2. State two of the principal productions of each of the following countries: England, China, Brazil, Spain, France.

3. For what is each of the following cities noted: Scranton, Springfield (Mass.), Wilmington (Del.), Cincinnati, Chicago?

4. Locate the following mountains: Everest, Kilimanjaro, Illimani, Washington, Elboorz.

5. Name the principal manufactures of the following: Pennsylvania, England, France, Russia, Belgium.

6. Name three States noted for corn; three for tobacco; two for coal and iron; two for wool.

7. What and where are each of the following: The Steppes, the Selvas, the Kuenlun, Ceylon, Ormus?

8. What is the government of each of the following: Russia, Peru, Switzerland, Brazil, Mexico.

9. Mention four of the principal exports, two of the principal imports, two of the principal manufactures, and two of the principal mineral products of California.

10. Where do we get sugar, coffee, coal diamonds, quinine?

[CONCLUDED NEXT MONTH.]

LITERARY NOTES.

THE SEPTEMBER MAGAZINES.—The current number of *Harper* is certainly a beautiful one. The portraits in which it abounds are lovely works of art; and a poem by W. M. Briggs, entitled *Among the Grasses*, is illustrated in a style unsurpassed in magazine literature. Noticeable articles this month are: *The American Graces*, by E. L. Didier; *Fish and Men in the Maine Islands*, by Bishop; *The family of George III*, by K. M. Rowland; *The Seven Sleepers' Paradise beside the Loire*, by Con-

way; and W. H. Rideing's *Squatter Life in New York*.

The *Atlantic Monthly* for September has a table of contents of more than usual excellence—which is a high compliment. The *Stillwater Tragedy*, by Thomas Bailey Aldrich, is concluded. Of special interest are: *Sir Walter Scott*, by Thomas Sergeant Berry; *Political Responsibility of the Individual*, by R. R. Bowker; *The Perpetuity of Song*, by James T. Fields; *Women in Organizations*, by Kate Gannett Wells; *Reminiscences of Washington—the Harrison Administration, 1841*; *Mrs. McWilliams and the Lightning*, by Mark Twain; *Oxford and Cambridge*, by Richard Grant White; *Progress of the Presidential Canvass*.

Among the chief articles in *Appleton's Journal* are the following: *Edge-Tools* (in two parts—part second), by Annie Rothwell; *The Influence of Art in Daily Life—Furnishing the House*, by J. Beavington Atkinson; *Sterne (Hours in a Library)*, by Leslie Stephen; *Mr. Stoddard's Poems*, by Titus M. Coan; *Aerial Explorations of the Arctic Regions*, by W. Mattieu Williams; *The International Tribunals of Egypt*, by the Hon. P. H. Morgan; *The Story of Adrienne Lecouvreur*; *From Faust to Mr. Pickwick*, by Matthew Browne; *Story-Telling*, by James Payn; *Lazy Beppo*, a sketch, by Hans Hoffmann; *Modern French Art*; *Two American Divines—Dr. Bushnell and Dr. Muhlenburg*, Tom Taylor.

Our home monthly, the *Californian*, displays in its September number another evidence that editorial ability can make a fine magazine, even in the most unpromising field. Since Mr. Phelps has taken charge, the *Californian* deserves a place in the first rank of American magazines. The notable articles in this number are: *Mr. H. N. Clement's To the Victors belong the Spoils*; *Mr. Samuel Williams follows with an interesting account of Abdel-Kader*; *Alexander Del Mar furnishes a sketch of John A. Sutter*; and *Sallie R. Heath contributes an article full of information on the Vineyards and Wines of Napa Valley*. *Hon. Henry A. Peirce, for many years the United States representative in the Sandwich Islands, gives an account of the early discovery of those islands*. *Prof. Martin Kellogg furnishes a beautifully written *morceau*, entitled *A New England Farm**. In the way of stories, *Mr. W. C. Morrow's new serial, *A Strange Confession*, is commenced*. *D. S. Richardson, for several years *attaché* of our legation in Mexico, furnishes some of his experiences*.

The September *Lippincott's Magazine* contains the following in a very interesting table of contents: *Among Florida Lakes*, by Louise Seymour Houghton; *Canoeing on the High Mississippi*, by A. H. Seigfried, illustrated; *Adam and Eve (a novel)*, by the author of *Dorothy Fox*; *A Villeggiatura in Asisi*; *Horse-Racing in France*, by L. Lejeune, illustrated; *Mrs. Pinckney's Governess*; *The Home of the Gentians*, by Howard Glyndon; *Newport a Hundred Years Ago*, by Francis Pierrepont North; *The Ruin of Me (told by a young married man)*, by Mary Dean; *Short Studies in the Picturesque*, by William Sloane Kennedy.

THE PACIFIC
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No. 10

AN OBJECT-LESSON IN CHEMISTRY.

BY PROF. H. B. NORTON.

[California State Normal School, San José.]

THE study of physical science seems to be a growing element in our educational work. The knowledge of nature is being enormously extended and popularized. Teachers are expected to know more in this direction year by year, and there is an increasing demand for such scientific instruction as shall not require for its illustration costly and cumbersome apparatus.

In general, the tyro gets little knowledge of the needful manipulations from the ordinary text-books and manuals. These usually seem to assume for the learner the presence of a teacher, and of an elaborate system of scientific furniture. The little details which secure success and safety are often entirely omitted. We need a manual of elementary "Chemistry without a Master," which shall contemplate the use of only the simplest and least expensive apparatus. It is astonishing to see how cheaply one may work through any chemical manual, after learning how.

Let us take the ordinary elementary lecture upon Oxygen, with a few illustrative experiments. Put into a test-tube one half ounce of pulverized potassic chlorate, with the same weight of manganic di-oxide. Fit into it a cork, through which has been thrust a bit of clay pipe-stem. Upon the projecting

portion of this pipe slip a small tube of elastic rubber, two feet long, and the evolution apparatus is complete.

Now for the receiver. Fill a large bottle with water; cork it tightly; plunge the nose of the bottle into an ordinary tin wash-basin, also full of water, and set in the corner of a sink, so that the bottle will be supported diagonally. Withdraw the cork below the surface of the water, and the bottle remains full. A spirit-lamp (costing 25 cents), filled with alcohol, completes the apparatus.

In default of a test-tube, an ordinary small ink-bottle set into a polished tin cup, and covered with sand to equalize the heat, will answer the purpose.

Care must be taken to avoid tilting the tube, that the pipe-stem may not be closed by the fused chemicals; and it must be rolled by the left hand, while the right hand holds the lamp, to keep the tube from melting or cracking. The bottle will be filled in a few minutes, and then it may be corked under the water. A little water should be left in the bottle, which may remain in an inverted position, thus preventing the contamination of the gas by osmose through the cork.

Our text-books and manuals describe a series of little experiments for the young student, among which the burning of a watch-spring always figures conspicuously. We are told to heat the wire, or dip it in sulphur or sealing-wax, and ignite before introducing it into the gas; but the experiment fails probably half the time. The following method never fails: Heat the steel ribbon in the lamp-flame, and, when cool, it may easily be straightened by the fingers. Heat again half an inch at one end, and, while hot, double it back with a short bend. In the angle thus formed wind a thread of cotton twine with two or three turns; tie it; dip into the sulphur repeatedly, melting in the lamp each time, and we have a steel match that never refuses to ignite.

I must not trespass on the space of the JOURNAL by describing further experiments. These suggestions may seem very trifling to the advanced student, and yet be acceptable to the untrained teacher of the rural school, who would like to sometimes give new ideas and subjects of thought to his pupils. There are undeveloped Priestleys and Tyndalls yet to be guided into the path of scientific research by such suggestions and lessons.

THE SOLAR SYSTEM AND ITS NEIGHBORS.*

BY C. B. WARRING, PH. D.

HOWEVER many of us may have sought, by these or other illustrations, to form some conception of the vastness of the universe, but few have attempted to grasp the measure of that power which compels the planets to move in elliptical orbits instead of flying off in tangents, as, if left to themselves, they would inevitably do; and still fewer have thought of the force with which

* Read January 13, 1880, before the Poughkeepsie Society of Natural Science.

these bodies tend to pull one another out of their courses. Of these influences astronomers have given no illustrations, yet their contemplation will lead to results that will enlarge our views of the universe, and help us to rise at least a little toward a conception of Omnipotence.

We must work out our conclusions ourselves. The data are all at our hand. We need only to know the distances and masses; the rest is a matter of easy computation. But that our results may not be meaningless from their very greatness, it will be wise to follow the method which we pursue when trying to get an idea of great distances. We take first some unit with which we are familiar—for instance, a mile—and think how many miles it is to some place familiar to us. Then we extend that measure, or some multiple of it, to another place more remote, and then to one still more more distant; and thus by degrees we become able to grasp distances whose statement in figures had previously conveyed little or no meaning to our minds. So, in measuring a force, we get a better idea of its greatness if we work up to it in a similar manner.

Of all known substances steel is the most tenacious. If the interplanetary forces can be represented by steel bars of known size, it will at least help to bring them within the limits of our comprehension.

Philosophers have found that a steel wire one-tenth of an inch in diameter will support nearly half a ton, while a bar one inch square will not be pulled asunder by less than sixty tons. If two inches square, it will require 240 tons; if three inches square, it will scarcely break with 540 tons. Bars of steel are not often made larger than this, although Krupp, in his colossal works, doubtless makes some whose section equals 144 square inches. To pull apart such a bar would require a strain equal to the weight of 8,640 tons. It requires an effort to grasp the meaning of such a load. A stout team will haul two tons over a good road for a moderate distance; that number of tons would require more than 4,000 such teams to move it. If put upon a railroad it would need 864 cars and twenty-three locomotives to draw it. It would equal in weight one of the largest ocean-steamers with its complement of freight.

But we shall need a much larger unit than this. Could a bar of steel three feet square be forged—and, judging from the size of his steel cannon, Krupp might do this also—it would be able to lift nine times that great amount. Probably no furnace can much exceed this, but we may imagine a monster bar measuring one rod— $16\frac{1}{2}$ feet—square, and by easy multiplication we find its strength great enough to lift $30\frac{1}{4}$ times as much as the last, or in figures 2,352,240 tons, three times the weight of the cotton crop of the United States when it equaled 4,000,000 bales.

To get a fit unit for our purpose we shall need to go far beyond this, but first pause to contemplate a bar of steel $16\frac{1}{2}$ feet square. As it lay stretched upon the ground, we would need a ladder to get upon its upper side. Few rooms in private dwellings are $16\frac{1}{2}$ feet high, and $16\frac{1}{2}$ feet wide makes a spacious parlor.

Endeavor to get some idea of its tenacity, and how many million horses it would require to pull it asunder, and then, after getting somewhat accustomed to the greatness and strength of a bar of solid steel $16\frac{1}{2}$ feet square, imagine one

which is one mile square—5,280 feet wide, and as many thick. If it lay on the ground near the Catskill Mountains, its upper surface would overtop their highest summit by more than 1000 feet. It would be equal to 102,400 such monster bars as the last. Its lifting power would be nearly 240,869,000,000 tons. The mind is utterly unable to grasp such figures. The whole globe contains 1,200,000,000 inhabitants. If each man, woman, and child, could pull with a force of one hundred pounds—a large estimate—to move such a weight would require the united efforts of the inhabitants of two thousand such worlds as this.

As I shall have frequent occasion to speak of the load which such a bar could sustain, I shall, for convenience, call it in round numbers 240,000,000,000 tons; neglecting the other figures, because the number is so inconceivably great that taking from it a billion or so of tons will alter the result less than one half of one per cent. This bar is to be the unit of measure which I shall for the present employ, and with its help I shall attempt to give some idea of the influence of the sun in holding the system together, and of the attraction exerted by the planets upon our earth, and by the earth upon the moon; and, lastly, by the fixed stars upon the sun and upon each other.

We begin with the moon because it is nearest to us, and, with the exception of the sun, it is to us the most important of all the heavenly bodies.

If half a dozen persons were asked how large the moon appears, they would give as many different replies: "The size of a cart-wheel"; "Twelve inches across"; "The size of a dining-plate"; "As big as a man's head," etc. Probably no one would mention a smaller measure, yet a cherry held at arm's length much more than covers its disk. It is difficult to believe that so a small body exerts any considerable influence on the earth which seems so immensely larger. It is easy enough to admit that the earth holds the moon in its orbit; but that, to do this, to bend its course into a nearly circular orbit, requires any great outlay of force, is not so clear. Our credulity would be taxed were we asked to believe that the moon in its efforts to move in a straight line would break away, although held by a bar of steel one foot square, for that means a force able to lift nearly 9,000 tons. An astronomer would grant it, making first a mental calculation to see if he were justified in doing so; but even he would hesitate, and perhaps would deny that it was possible the moon could pull asunder one of those great unit-bars one mile square, and equal to more than 27,000,000 bars each one foot square.

But he would have no hesitation in saying, "Impossible!" if told that, rather than change its course from a straight line to its present curve, our willful little satellite would snap like pack-thread not one, nor two, nor three of those unit-bars, but the united strength of 10,000—or, in other words, one gigantic bar whose section is 100 miles square. Yet, more than eight such bars, or, more precisely, 87,500 unit-bars, would but barely deflect the moon into its present path.*

You say, "This is too much—no one will believe it!" Let us see. A

* The non-astronomical reader may, perhaps, need to be reminded that the moon does not move easily and naturally in a circle, or ellipse—but that its path, if left to itself, would be a straight line—a tangent to its orbit. Consequently, the moon requires to be forced into a curve.

few astronomical facts, with a very small amount of mathematics, will suffice to show that there is no exaggeration here. One need know only the weight of the earth and moon, and their distance apart, and the law that gravitation grows less as the square of the distance increases, and he has all the elements required for the calculation.

The weight of the earth is found by an experiment described in almost every school philosophy. It consists in comparing the attraction exerted by a ball of lead of known weight with that exerted by the earth. In this way the earth's weight has been ascertained to be in round numbers 6,000,000,000,000,000,000,000 tons, or, as it is more conveniently written, 6×10^{21} , where the 21, of course, denotes the number of ciphers after the 6. The moon's mass is nearly one-eightieth (1-81) as great; or, in other words, if it lay upon the surface of the earth, it would weigh 75,000,000,000,000,000,000 tons (75×10^{18}). This, however, must be diminished, because the moon is, in fact, sixty times farther off, measuring in both cases from the center of the earth. Dividing, then, the moon's weight by the square of 60, or 3,600, we have for the weight at its actual distance something more than 21×10^{15} (21,000,000,000,000,000) tons, after adding one-eightieth for the attractive power of the moon itself, for there is a mutual attraction.

To get, then, the number of unit-bars necessary to equal this effect, we have only to divide the weight of the latter by the amount which one of these bars will sustain. That is, we divide 21×10^{15} , by 24×10^{10} , and find the quotient to be 87,500, which agrees with our statement.

It will be interesting to stop here, and endeavor to get some faint idea of what these enormous numbers mean. A bar of steel whose section is 87,500 square miles would include within its four sides a territory as large as that of New York State, and still leave enough to cover the State of Ohio, with a surplus of 536 square miles for good measure. We read in a certain book of a traveler who, coming into Lilliput, was held immovable by thousands of tiny threads. If a web of steel were stretched from the earth to the moon to hold our satellite from flying off into space, each tiny thread being represented by a bar of steel one-fourth of an inch square—no trifle, for each could hold 7,500 pounds—they would cover our globe on the side towards the moon with a network whose threads would be only six inches apart, and through which none but the smallest animals could pass.

It may aid us, while seeking to grasp such a force, if we reflect that the very small difference between the moon's pull upon the ocean and that upon the earth's center suffices to lift the tides; how vast, then, must be the whole pull upon the earth!

All this inconceivably great force is needed to bend our satellite's course from the straight line in which it would move if left to itself. This force is exerted, not once for all, as in case of the original impulse that sent the moon forward in its path, but afresh every second; for otherwise, after such an indrawing, it would move henceforth in a straight line. To give a circular orbit, the direction of the moon needs to be changed every moment, and this requires a series of impulses.

Thus much for our earth's satellite. We may extend our reasoning to more distant bodies. The earth is 81 times the mass of the moon; the sun is 315,000 times the mass of the earth, and something more than 381 times as far from it as we are from the moon. Combining these in an easy calculation, we find that the sun puts forth upon our earth a coercive force to bend its path into an ellipse, a force to be measured by 15,000,000 of our unit-bars, together making a bar of solid steel whose section would cover 15,000,000 square miles, more than four times the area of the United States. The wires, such as we supposed to hold the moon, would, in the case of the earth and sun, be almost as close as the blades of grass on a lawn.

Without going any further into calculations, it is enough to say of the other planets, that Mercury is held to its duty by 6,590,000 of our unit-bars; while Venus, being nearly as large as the earth, and so much nearer the sun, requires the united strength of 23,000,000. Mars is smaller, and more remote, and therefore needs only some 811,500 such bands to hold it to its course; for, strange as it may appear, and however unlike other sovereigns, the sun holds its subjects in obedience the more easily, the greater their distance from the center of the system—provided, of course, that their importance otherwise is the same. But still, distant as it is, Jupiter's immense mass demands incomparably the strongest measures to keep it in check; nothing less than 170,000,000 of those bands of steel will overcome its wandering tendencies. Saturn, being a lighter weight, is more easily guided—15,000,000 suffice for that. Uranus and Neptune are of little account as compared with Jupiter; 588,000 for the one and 282,000 for the other, are all that are needed to restrain their vagaries.

If, now, we turn to the planets, and study their influences, we shall find them pulling and tugging at each other with forces that, but for compensations planted in the system itself, would tear it to pieces; but, like the armed men of Cadmus, these forces destroy each other.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[Santa Barbara County.]

CHAPTER XIV.—CONTINUED.

“THAT white pullet near the door,” continued John, “is very obstinate. She is determined to have her nest on my bed and nowhere else. If the door is opened, in she slips, so slyly that I don't see her half the time. Though I have fixed nice nests for her outside, she will never use them, if she can find a way to disobey me, and get into the house.”

“I would chop her head off,” said Harvey, indignantly.

“Would little boys like their heads cut off whenever they go where they

are told not to? She will be wanting to set pretty soon, and then I can hire her to stay outside by giving her a nice nest of a dozen eggs to sit upon."

"My mamma hires me to do things sometimes," said Harvey, "and she don't always pay, neither. Maybe you might fool that hen some way to stay outside. That white rooster is n't bad, is he?" and Harvey pointed to a handsome white Leghorn that was strutting proudly before the admiring gaze of some of his favorite hens.

"The very worst fowl I have," replied John. "If it had not been for his beauty he would have been in the pot long ago. In the first place he is an awful liar."

"I do n't see how a chicken can tell lies. How does he do it, and what makes him?"

"He is like many people," replied John. "It is his vanity which makes him lie. In the morning he greedily stuffs himself, until he is no longer hungry, and then he struts around and wants to be noticed. Perhaps his hens are wandering around in search of worms, and pay little attention to him. Then he makes believe he has found a worm, and he calls loudly and eagerly to the hens, pecking at the bare ground as if he is tearing the worm to pieces. When the hens come running up to receive the proffered morsel, he straightens up, and, giving his wing a scrape with his foot, struts around as big as if he never told a lie in his life."

"I have seen ours do that," said Dick, eagerly; "and sometimes, when he really has a worm, he will wait until the hens get there, and then eat it up himself."

"I have known little boys," said John, in a tone which seemed to imply that those little boys were a thousand miles from there, "who would display nice things which they might have for lunch, and call to other little boys to come and see what they had, and then eat every bit of the nice things without a thought of dividing."

"What else does the rooster do that is bad?" inquired Dick, who found that this application touched very close to his own actions.

"He brags a great deal. You know how bad it looks to see a man or a boy bragging of what he can do, and trying to 'show off,' as you boys say. This fellow brags about his beauty, his fine voice, and nearly everything he does. Like most braggarts, though he is inclined to be quarrelsome with those weaker than himself, he is a great coward. But I expect he will be surely punished by and by."

"How?" inquired Harvey. "Will you kill him?"

"No. But when some of those little chicks, that are part game-cocks, get larger, they will attack him, and if they do not kill him, they will tear his fine plumage so that those hens, who now think him so handsome, will despise him, and desert him for his successful rivals. He is so proud that I doubt whether he would live long after his beauty is gone."

The little Browns wished that they might see the fight, but did not say so, for they knew that John did not approve of those fights between animals which most of the Wild-cat people delighted to encourage. Sentimental kindness to

all animals John did not teach, but he made unsparing war upon 'wanton cruelty. "If you see a hurtful animal, it is your duty to kill it. But because you have a right to kill it, it does not follow that you have a right to torture it," John had often told his pupils.

Those who live must kill. Nature says in unmistakable language, "Destroy, or be destroyed;" and such folly as that of some vegetarians, who will not eat animal food because it is wicked "to take the life you cannot give," is scarcely worth a passing notice.

"Do you not want to see my little chickens?" inquired John, rising and laying aside his finished work. "It is about feeding time, and I expect they are now looking for me."

John took a pail of ground feed, and led the way to the back of the house, where he stopped beside some neat white-washed hen-coops. Taking some of the meal in his hands, he called gently to the little chicks, which ran out to him, clambering over his feet and hands, and pecking eagerly at the food he offered them.

"How very tame they are! Would they eat out of my hand that way?" cried Harvey.

"Try them and see."

Both boys took some of the meal in their hands, and were delighted to see the chicks climb up into their hands, and eat with perfect fearlessness.

"How much nicer your chickens are than ours. Ours run when we go near them. I don't believe they are so tame a kind, Mr. Dean."

"Always treat your chickens kindly; never try to frighten them, and they will be gentle," replied John. "They must be taken while young, fed from the hands and accustomed to handling, and then they will be as tame and troublesome as anyone can desire."

"Can you tame other things that way? Birds, I mean," inquired Dick.

"Yes. I found a nest of road-runners in the bunch of prickly-pear cactus. You know how wild they are naturally; but I fed them while they were young, and they frequently come and run into my house, even; though they are very shy when strangers come here."

"Are the hens that way, too?"

"Oh, yes. Stay here a moment. See!" and John approached a nest in which a speckled pullet was quietly sitting. She merely bent her head and croaked a little as John gently placed his hand on her back; but at the approach of the two boys, she flew from her nest, cackling with loud alarm.

"Why did she do that? We would not have hurt her," cried Harvey in an aggrieved tone.

"I suppose she thought you might hurt her."

"You don't suppose our hens could have"—hesitating a little—"ever told her that we throw clods at them once in a great while."

"No, I think not," said John, heroically controlling his desire to laugh at this queer idea.

"I wish I could make animals so they would n't be afraid of me," said Dick.

"If you desire not to frighten a timid animal, you should never look straight at it until it becomes familiar with you. Many a time have I watched a gopher digging and eating without apparently caring for my presence, but if I looked squarely at him, down he would go into his burrow. Soon up he would come, half way out, and if he again caught my eye, down again he would back, and I would see him no more. In a little while I would see some dirt pushed gently up to stop the hole, then one or two trembles of the dirt, as he packed it tightly in, and Mr. Gopher would retreat to some other part of his underground dwelling."

"Look at that mean hen," cried Harvey; and they all hurried to another coop just in time to rescue a stray chick that had intruded among another brood, and got sadly pecked by the old hen.

"That hen is like many another parent," said John. "She sees no good in any young besides her own. She takes the greatest care of her own chicks, but woe to the one that is a stranger, for she knows no mercy. There are lots of people, Dick, who cannot see an inch beyond their own children's noses."

"Papa often says that 'Every crow thinks her own young the whitest.' What does he mean by it?" inquired Dick, who had caught a little of the meaning of what John said.

"He means that every mother thinks her own children are smarter, or handsomer, or better in some way than other children," explained John.

"But my mother do n't think that. She is always telling us how bad we are, and how good Willie White is—for one."

"Do you think she would trade you off with Mrs. White for Willie?" inquired John, slyly.

"No. I don't believe she would," admitted Dick.

"Some people do not like to praise their children to their faces, for fear it may make them proud and vain," said John; but he thought to himself it would have been as near the truth, had he said that some people think they must be ever finding fault with those they love the best, instead of giving them judicious praise when they deserve it.

Just then a black hen flew to the top of the fence, and made such a ludicrous attempt to crow that they could not help laughing.

"I call her Susan B. Anthony," said John. "She seems to envy the other sex their ability to crow; and she will hardly ever associate with the other hens, but wanders away to herself, cackling and trying every little while to crow. Sometimes she gets into a fight with one of the smaller roosters, but she does not make a success of that either."

"She will come to a bad end," announced Dick in a solemn voice. "She and Alpha Black."

"Whistling girls and crowing hens
Always come to some bad ends."

quoted John. "I don't believe in that old saying, Dick. I don't see any reason why hens should n't crow, or why girls have n't as good a right to whistle as boys have. I am sure Alpha whistles very nicely, and I like to hear her."

Then the three went to John's strawberry patch, and gathered some ber-

ries for supper. And how the little boys did enjoy their supper, which they helped John to prepare!

"I guess we will come again soon," said Harvey as he realized that he could not safely eat any more berries, and leaned back in his chair with a sigh of utter fullness.

"When I get big I am going to live alone, and have every thing nice, and no one to bother me and say I must n't have things."

"I'd rather have some woman to wash dishes and do the work for me. And I heard Mrs. Johnson say that she guessed Miss Bell would rather wash dishes for Mr. Dean than go out and teach school."

"Mrs. Johnson had n't ought to say such things, Dick," said John, much annoyed, "and you ought not to repeat such things when you hear them."

John saw that Dick looked puzzled, and did not understand how he was wrong, and John tried to explain.

"Do you remember telling me some things about the Peters boys, some time ago? Now, if you had thought I would go to them and tell them that you told me what you did, you would not have told me. You would not like me to tell other people what you say to me, and you should never tell anyone anything that it was meant that he should not hear."

"But she said she would like to tell you that."

John was taken aback at this announcement, but soon rallied again.

"You sometimes say you would like to tell some of the larger boys things which you not dare to tell them."

"That is because I am afraid of them," said Dick, candidly. "Is Mrs. Johnson afraid of you?"

"I guess it is about time for you to be going home. You know your mamma does not like to have you stay out late. You can come and see me again some time."

"I wonder whether Mrs. Johnson is afraid of Mr. Dean," said Dick to himself, on the way home. "I guess she is n't, for she is n't afraid of Mr. Johnson. He is afraid of her. I believe I would like Mr. Dean just a little better if he didn't want folks to be so very good. I think it is nice to be a little naughty once in awhile." Which last remark showed that Dick had not yet learned that the way of the transgressor is hard. Yet it may be that it was only a rebellion against the false standards of morality that so many people put up in the name of religion.

The first of the series of school buildings to be erected at Garden City, according to the purpose of the late A. T. Stewart, is nearly completed, and will perhaps be ready for partial occupancy in the fall. When completed, the school buildings will be seven in number, and, under the name of "Cathedral School of St. Paul," will be dedicated to the memory of Mr. Stewart.

A SCHOOL CABINET.

BY J. W. REDWAY.

[Fruit Vale, Alameda County.]

OBJECT teaching, like other educational epidemics, has had its day, so far as it is considered an educational revolution. A flourish of trumpets heralded its incoming. For a few months it spread like the colic in water-melon time. Even corn-doctors and mock auctioneers shouted for it—and made money out of it. Then every one dropped it as though it was the property of a small-pox patient. A period of disgust followed, and then all parties interested took it as a good joke, and laughed about it. But, even to this day, those who were its strong advocates in the time of its explosion—and the writer is one—would rather change the subject when object teaching is mentioned.

And yet, with all the ridiculous features of its fever height, and the disgusting misapplications of it, there was one feature about object teaching, the truth of which cannot be denied: *To know a thing you must first see it.* Every real teacher had recognized this truth long before the epidemic, and no true teacher has ever lost sight of the principle.

This assertion can certainly be made of Superintendent Gilson, of Alameda. In the class-room his pupils still remember him as a teacher whose methods of instruction and explanation have been singularly clear, owing to a happy faculty of illustrating every point of demonstration, and emphasizing all descriptive work with *tangible* evidence.

This practice of objective teaching has had its outgrowth in the shape of a school cabinet, to the description of which this article is devoted.

The cabinet is not designed to supplant anything; it is not a "method"; it is not the "Quincy system." It is, however, a very useful complement to the teacher who is tied to any method, to no method at all, or even to the unfortunate victim who has so far lost his pedagogic individuality as to be tied to every method. It is a dangerous, sharp-edged tool in the hands of those teachers only, whose ignorance of common things might be thereby exposed. Hence, in the experience of the writer, it should be handled with care.

One of the leading features of the cabinet is to illustrate the principal industries of the world, by showing the materials in the raw, the transition, and the manufactured state. For instance, in the mineral kingdom, iron is exhibited as iron ore (several varieties); pig-iron, showing its crystalline fracture; refined cast-iron; wrought-iron (several varieties); steel; oxide of iron (rust); carbonate of iron (a paint), and copperas (sulphate of iron). In a descriptive manual, which accompanies the cabinet, processes and products are described. Copper is illustrated by ores, minerals, native copper (crystalline), refined metal, and the cupric salts that are used in the arts. The various useful alloys are exhibited beside their component metals, and the latter, so far as is possible, are arranged in such a manner that the *size* shows the proportion of each com-

ponent of the alloy. The lead group embraces lead ore (galena); metallic lead; litharge and red lead (oxides); the carbonate, native and prepared (white lead), in all the stages of its manufacture; the lead pigments, and the principal alloys.

The manufactured products of the animal kingdom will be exhibited in a like manner. Under the head of silk will be shown the cocoon, reeled silk, spun silk, silk thread, and the various silk fabrics in their different stages of completion. Gelatine, glue, parchment, and twenty kinds of leather, find a place in this department, each appropriately described in the manual. Ivory, coral, pearls polished, pearls *in situ*, mother of pearl, abalone, etc., are also represented.

Under the head of vegetable products may be found the vegetable oils, resins, etc., used in the arts and the professions, in every stage of manufacture. Thus, a poppy-head, gum opium, and morphine are classified together; as are also gum sandarach, pounce, and varnish; peruvian bark, cinchona, and quinine; wheat in the stalk, in the kernel, graham, shorts, middlings, flour, and bran. Coffee, and its companion chiccory; tea; the spices, and their sisters, cousins, and uncles, are found in variety and classified. Grape, beet, cane and maple sugar, as well as sugar of milk, find a place. Cotton in every shape, from the boll to the bolt, is represented; and so also are flax, hemp, and jute.

The whole, of which I have here mentioned a few leading samples, is arranged in an upright cabinet containing six draws, each faced with a different kind of ornamental wood; and a side-case for large articles which cannot be conveniently placed in draws. The cabinet in dimension is about four feet high, two and one-half feet wide, and one and one-half foot deep. Those to be made hereafter will be smaller and more compact. The draws containing the mineral specimens are divided into square compartments; most of the other specimens are contained in German salt-mouth bottles, hermetically sealed. Specimens of cloth fabrics, leather, paper, etc., are either to be bound, or else securely fastened to rings. In nearly every case the specimen is out of reach of mischievous fingers.

The cost of the cabinet will probably not exceed twenty-five dollars. This includes case, specimens, and the manual. This small cost is owing to the fact that Mr. Gilson will buy all materials in bulk, and afterward label, classify and prepare the specimens himself, without charge.

It is Mr. Gilson's desire to place one of these cabinets in every school in the county; and as soon as the present pressure of office-work is over, work on the cabinets, which has been temporarily suspended, will be resumed.

The design, scope, and utility of such a cabinet is too evident to require elaboration in these columns. It is not intended as a substitute for brains and energy, but merely as a useful and handy coadjutor.

The late Dr. D. T. Cott, of Norwich, has left a bequest of \$100,000 to *Yale College*, from which he graduated in 1825.

EDUCATIONAL GLEANINGS.

[From the Scrap-Book of a Teacher.]

WE have still to make the mother-tongue and its literature a part of the school course; foreign nations have done this, and we should do it. But neither foreign nation nor we have yet quite learnt how to deal, for school purposes, with modern foreign languages. The great purpose is to teach them for speaking purposes with a view to practical convenience. This notion clearly belongs to what I have called the commercial theory of education, and not the liberal theory; and the faultiness of the commercial theory is well seen by examining this notion and its fruits. * * * The learning to speak foreign languages, showy as the accomplishment always is, must be regarded as a quite secondary and subordinate aim. * * * It is as literature, and opening fresh roads into knowledge, that the modern foreign languages, like the ancient, are really school business.—*Matthew Arnold.*

This one's special aptitudes are for knowing men—the study of the humanities; that one's special aptitudes are for knowing the world—the study of nature. The circle of knowledge comprehends both, and we should all have some notion, at any rate, of the whole circle of knowledge. The rejection of the humanities by the realists, the rejection of the study of nature by the humanists, are alike ignorant. * * * Evidently, therefore, the beginning of a liberal culture should be the same for both. The mother-tongue, the elements of Latin and of the chief modern languages, the elements of history, of arithmetic and geometry, of geography, and of the knowledge of nature, should be the studies of the lower classes in all secondary schools, and should be the same for all boys at this stage.—*Matthew Arnold.*

The aim and office of instruction, say many people, is to make a man a good citizen, * * * or it is to fit him to get on in the world. * * * It is none of these, and the modern spirit discerns it to be none of these. These are at best secondary and indirect aims of instruction; its prime direct aim is to enable a man to *know himself and the world*. Such knowledge is the only sure basis for action, and this basis it is the true aim and office of instruction to supply. To know himself, a man must know the capabilities and performances of the human spirit; and the value of the humanities * * * is that it affords for this purpose an unsurpassed source of light and stimulus.—*Matthew Arnold.*

As to reading (*i. e.* learning to read), a great care is to be taken that it be never made as a business to him, nor he look on it as a task. * * * I have always a fancy that learning might be made a play and recreation to children. * * * Thus children may be cozened into a knowledge of the letters; be taught to read without perceiving it to be anything but a sport; and play themselves into which others are whipped for. Children should not have anything like work, or serious, laid on them; neither their minds nor bodies will stand it.—*Locke.*

It will no doubt be said that it is better to know four subjects well, than to have a smattering of many. This is no doubt true; but no one wishes that boys should have a smattering of any. It is one thing to know a few stray facts of a subject; it is quite a different thing to be well grounded in it.—*Sir John Lubbock.*

Whatever foreign languages a young man meddles with (and the more he knows, the better) that which he should critically study and labor to get a facility, clearness, and elegance to express himself in, should be his own, and to this purpose he should daily be exercised in it.—*Locke.*

As our public instruction gets a clearer view of its own functions, of the relations of the human spirit to knowledge, and of the entire circle of knowledge, it will certainly more learn to awaken in its pupils an interest in that entire circle, and less allow them to remain total strangers to any part of it.—*Matthew Arnold.*

It is impossible children should learn anything whilst their thoughts are possessed and disturbed with any passion, especially fear. * * It is as impossible to draw fair and regular characters on a trembling mind, as on a shaking paper.—*Locke.*

A PLAIN TALK.

BY IRENE HARDY.

[Oakland High School.]

A DISTINGUISHED German-American has said that, "Any system of education which fails to teach the child to see, to hear, and to reproduce correctly, is essentially faulty."

It would have been just as easy to say that any system of education which prevents a child from learning to see and hear is a failure; for a child brought up in such contact with nature as health demands *will* see and hear. If he is not put too early to doing things which arrest the seeing faculties—that is, to spelling, arithmetic, maps, and the like—he will learn to use his eyes and ears to a most excellent purpose.

At six years of age the average California child enters the public school. If he has lived in the country, he has already learned countless things with his eyes and ears. You cannot trip him up on the kinds of trees, flowers, or birds about; he knows where the purple lilies grow; when the thimbleberries are ripe; what kind of feet and mouth and teeth the common animals have. He probably laughs at you when you walk out with him in the evening, because you do not know the little grey owl from the "flittermouse." He knows that a tadpole loses its tail, gets legs, and concludes to hop on land instead of swimming in muddy water; that the field-lark's song goes "along, and up, and

down, like this" (whistle, whistle), and that its nest is—"O, p'raps right here in the grass! Let's look." And so forward, toward an intelligent open-eyedness that has already begun to lead him to thought, and reason, and much knowledge. Only a few weeks ago—to illustrate—one of these nature-taught children, an average ten-year-old boy, said to me, as we were looking at some wild grasses: "There is n't *anything*, is there—*not one thing*—that has n't its faults?"

If, on the other hand, he is a town-bred child, he is perhaps not less wise at six years of age, but differently so. He knows about steam-engines and cars, shop-windows, processions, fires, gala-days, and garden flowers, groceries and markets, and errand-running.

In either case, the chances are that, as soon as he enters school, he is at once forced to turn all his bright, curious, little soul toward spelling-books and slates; for five or six hours in every day all this devouring desire to see and to hear is arrested and semi-directed toward matters that should not constitute even the half of the first year at school. *Too much* BOOK and FACT *education* is the main fault with our present system. There is a great loss of force in doing things that could be done in half the time, later; or misapplied force, which brings about, not negative results merely, but positive and permanent injury to the infant mind.

We forget that the child has a body, "organs, dimensions, senses," while we remember with fatal energy, that he has a memory and some sort of an intellect, at which we can get, for our purposes, through his eyes and ears. Meanwhile, the education of his perceptive faculties stops, or goes on but feebly; the powers that, educated, would give him the upper hand in a grapple with circumstances, are left to grow as they may, while memory or other inferior faculties are nagged and worried into trying double work. The child has so much spelling, arithmetic, and what he is taught to call reading, to do, that he "forgets the glories he has known," and relapses into the docile, mole-eyed creature we meet along the street, with a bag of books carried home to study his lessons. Think of it! Infants under ten years of age staying four and a half or five hours at school, and then taking lessons home to be learned!

"Now," says Stultivudus, "you are talking against the public schools."

No, sir; they are the best that are; but I am talking against *things that are* and *ought not to be*; against the nonsense in the public schools. And, Stultivudus, if I were to reconstruct the early years of the public school course, there should be nothing taught in the first two years but conversation, botany, zoölogy, singing, and so much drawing as goes to the study of forms in natural history; *not a word of reading, writing, or spelling*. In the second two years, which would bring the child through his tenth year, one half of the school time should be given to learning to read, to the expression of thought, to writing and geometry; the other half to following up the work of the past two years. Every day through the four years there should be reading by the teacher from books of poetry, history, travels, fables, and stories. At the end of the tenth year, the child so taught would be infinitely better prepared for school work than nineteen-twentieths are at twelve years, by the present primary

system. He would know how to do *four things well*: To *see*, to *hear*, to *read*, and to *write*. Are not these enough? How many candidates for the high schools do these four things well? A far smaller fraction than one-twentieth.

You only misconceive, Stultivudus; but here are Miss Cornelia Blimber and our friend from the Academy of Lagado, they talk behind my back, and say: "A pretty theory; a *very* pretty theory, but it will not work. No, ma'am, you must have books, for discipline, from the beginning. Without definitions and rules, and learning by rote, there is no knowing anything. Without so much laid down to be done in a given time, there is no getting on; the sooner it is begun, the better; the memory must be trained"—and so forth, and on. Let us not try to convince them.

There was once a man who walked along the street, holding his hands out apart before him, saying: "O, don't push me! I've got a measure!" They are like him. The people laughed and stepped out of his way.

In training a child, it is well to remember that Nature did not make a mistake in shaping either the body or the mind, and that she points out the natural way of growth in one just as plainly as in the other. We have only to follow her lead—to take the limits she gives—and rejoice in the success she brings us.

THE ART OF READING.

BY S. H. SHAKESPEARE.

PAPER NUMBER ONE.

SOME time since, I had occasion to hold converse with a very eminent and able educator. In the course of that conversation, the subject of *good reading* was touched upon. Said he: "We do not wish dramatic reading in our schools; simply good reading." As it was not the proper time or place for a discussion, I quietly answered: "Dramatic reading includes everything that is good in the art."

I contend that if the legitimate actor is the best and most natural reader, he should be our type; and I furthermore believe, with Legouve, that the ART OF READING *is a necessity for all*.

Unfortunately, few can read.

Cox says: "Not one educated man in ten can read a paragraph in a newspaper with so much propriety that to listen to him is a pleasure and not a pain." Again, the same author says: "Why should correct reading be rare, pleasant reading be rarer still, and *good* reading found only in one man in ten thousand?"

I had the pleasure of witnessing Mr. Lewis Morrison's superb rendition of Mercutio's celebrated delineation of "Queen Mab." I have seen many Mer-

cutios, but none better than Morrison's. Now, if this gentleman's reading of Mercutio—one of the most difficult *rolés* in Shakspeare—was perfection, and that rendition was purely dramatic, how can any reading of that part, which is not dramatic, be good, or even tolerable.

There is no good reading that is not included in the drama, and dramatic. I do not mean a stilted, ranting, or affected style of delivery, which the thoughtless call theatrical; a style which no accomplished actor ever assumes. Good reading is free from this, and is in all things natural; always in accordance with the intelligent performer's conception of the part. Again, I quote from a celebrated English authority to prove my point: "The actor reads from his memory, instead of reading from a book, and he adds *action* to *expression*. The reader reads from a book, and not from memory; but he should recite what he reads in precisely the same manner as does the actor."

Now, if any one of the learned professors in any one of the various schools of this city should be called upon to work out any problem in mathematics or science, no matter by what course the deduction, no matter how many rules he should use in his theory, no matter whether these rules be long or short, by that work the actual result must be invariably the same. So, too, must it be with reading. We may become good readers by various modes of study, but the end is the same. If we are to take such performers as Mr. James O'Neill—nay, I will go back to the veteran actor and author, James E. Murdoch, as the most accomplished of readers, and who dares deny the fact?—as our types, why, I claim that I have proved the truth of my assertion. I claim that the readings of these gentlemen are purely dramatic, and that dramatic reading includes everything that is good in the art.

The fact is, the art of reading is very little known or practiced in those professions where it should be known and practiced the most. It is scarcely ever studied by the preacher, the lawyer, or the lecturer, and least of all is it known to the school teacher. I am speaking in a general sense. Doubtless there are some in this city, in all of these professions, who are good elocutionists; but they are the exceptions, not the rule. How then can instructors teach that which they themselves do not know? And so it is everywhere—learned and capable in all other things, but ignorant in that which comes first in the category of all learning.

I am informed that the number of public-school teachers in this State, to say nothing of private establishments, exceeds two thousand; and out of that number it is safe to surmise that not more than twenty—say at most fifty, and the estimate is very large—have any definite plan or thorough understanding of the art of reading. Surely a teacher's life and occupation is one of the most responsible, wearisome, and trying of all the professions; and yet, take them as a class, very few teachers can give proper instructions in that most necessary branch which introduces all other learning. Alas! they do not even know how to save themselves from throat disease, brought on by the constant exercise of the vocal powers. It is stated by the lady at the head of the Girls' Normal School, Paris, France, "that for every twenty teachers sent out of her

hands every year, to take charge of primary schools, two, and sometimes three, were obliged to stop work, suffering so much from affections of the throat that they were often obliged to give up the business of teaching forever." This should not be. According to the best medical authority, "exercising the voice properly is the most healthy of all gymnastic exercises." To strengthen the voice is to impart strength to the whole organization. Strengthen your voice and you develop not only your vocal capacities, but also the whole force and powers of the lungs and larynx. Here is proof: "In 1846 M. Fortoul was appointed to an important position in the faculty of Aix University. He hesitated about accepting; his weak throat made him look with some dread on the duties of a teacher. 'Accept by all means,' said his physician. 'The habitual exercise of your vocal organs in a public hall will strengthen them; only you must first learn how to speak.' He did accept; he did learn how to speak; he spoke; he succeeded; and at the end of the year he found that he had made four thousand francs by simply undertaking to cure himself of his sore throat."

A NEW METHOD IN ARITHMETIC.

BY HARLAN H. BALLARD.

[Lenox Academy, Massachusetts.]

THE science of numbers occupies so important a place in the curriculum of our public schools, and demands so large a part of the teacher's time, that any plan which will lessen the number of hours devoted to its pursuit, and at the same time secure improved results, must be welcome.

The plan herewith submitted to the teachers who read *The Journal* is called a "new" method because it is new to the author. It is not unlikely that other teachers have used it, and profited by the use. Before explaining the method in detail, it will be best to indicate the facts which led us to wish a method of hearing recitations in arithmetic other than the usual one, and the principles upon which the new method rests:

1. A large number of pupils fail to comprehend the principles of the more advanced operations in arithmetic, because their attention is entirely occupied with the manipulation of large numbers and intricate fractions.

2. The major part of an ordinary recitation in arithmetic is occupied in the working of examples on the blackboard; and the greater part of such blackboard work consists of tedious operations under the first four rules, viz., addition, subtraction, multiplication, and division.

3. It often happens that the hardest work in algebra is teaching the exact meaning of words and the precise significance of signs, whose force should have been fully learned and whose use should have been made familiar during the study of arithmetic.

4. The common attempt to avoid these difficulties by the early and ex-

tended use of formulas, while it has many advantages, sometimes leads to memory-work, and is often the source of much discouragement to pupils whose minds are too immature to grasp the broad generalizations which formulas involve.

In thinking over these obstacles in the way of rapid and thorough class-work, the following obvious and trite truths are impressed with fresh force upon my mind:

First. Every operation in arithmetic necessitates two things. These two things are—the knowledge of what is to be done, and the ability to do it.

Second. Granted the first of these two requisites; the second reduces to this—ability to add, subtract, and multiply, and divide accurately. No other operation can be performed.

Third. Deficiency in either knowledge or skill may be remedied; but,

Fourth. The treatment necessary to remedy ignorance of what to do is radically different from the treatment necessary to furnish ability to do it.

Desiring then to carry a class steadily and smoothly through a practical arithmetic, our method is this:

First. Teach the pupils that the first four rules are the tools with which all subsequent operations are performed.

Second. Drill them upon these until the entire class can add, subtract, multiply, and divide correctly and rapidly.

Third. Teach the principles and methods of fractions, percentage, etc., by the use of very small and simple numbers.

Fourth (and this is where the “new” method comes in). Require the class to indicate, *with correct notation, the solution of all the examples for practice which occur under the several rules, before allowing them to perform the operations necessary for such solution.* I give a few practical examples to illustrate the working of what I venture to call the *indicating method.*

The class being in position at the blackboard, the teacher says: “Indicate the present worth of \$220, due in one year, six months without interest; current rate six per cent.”

The class write, $\frac{\$220}{1.09}$ *Ans.*

“Indicate the bank discount of a note of \$350, payable in sixty days, discount at 10 per cent.”

$$\text{Ans. } \frac{\$350 \times 1.0105 \times 10}{6}$$

“Selling price, \$7,762.50; gain 15 per cent. Indicate the cost.”

$$\text{Ans. } \frac{\$7,762.50}{1.15}$$

“If $6\frac{1}{4}$ tons of hay cost \$58.75, how many tons can be bought for \$173.90? Indicate both by Analysis and Proportion.”

$$\text{Ans. } \left\{ \begin{array}{l} \frac{\$173.90}{\$58.75 \div 6\frac{1}{4}} \\ \$58.75 : \$173.90 = 6\frac{1}{4} \end{array} \right.$$

“How many gallons of water will fill a cistern which is 7 feet long, 6 feet wide, and 11 feet deep?”

$$\text{Ans. } \frac{7 \times 6 \times 11 \times 1728}{231}$$

By this method a teacher is enabled, in half an hour, to test the knowledge of a class concerning the manner of performing at least thirty different examples; and much time is saved, which may, if necessary, be devoted to practice upon the fundamental operations of addition, etc. Another advantage of the indicating method is, that the whole operation being expressed in proper form, cancellation may easily be applied when it is practicable.

In examining and reviewing advanced classes, it is rarely necessary to subject pupils to the drudgery of completing the solution of long and tedious examples. It appears to be the policy of most arithmetic-builders to make the numbers large and fractional, in proportion to the obscurity of the principles to be illustrated. The opposite plan should be pursued. When *what to do* is evident, let the work be difficult; when it is hard to decide what to do, let the numbers be small and the work easy.—*New England Journal of Education.*

THE C. L. S. C.

This department is under the editorial charge of MISS L. M. WASHBURN, San Jose, to whom all communications relating thereto must be addressed.

LOCAL CIRCLES OF THE C. L. S. C.

THE Chautauqua Literary and Scientific Circle, during its first year on this Coast, gained its strongest hold in Oakland, San Francisco, and San José; and a description of the methods of work inaugurated in these places may prove suggestive in other towns. The general plan in the three cities is the same, and has proved admirable. It consists of meetings of the whole circle for public exercises, and more frequent gatherings of smaller sections for what may be called class-work.

For instance, in the Oakland Circle, the general meetings average 150 in attendance, and sometimes reached 300. They were introduced by a lecture by Dr. Guard and a sermon by Dr. Eels. Other lectures and essays followed, with instruction at times by means of apparatus. The remarkably fine microscope owned by Dr. Wythe was at the service of the society, besides less powerful instruments, while physiology was the subject of study. In organizing the Oakland Circle, care had been taken to choose as officers representative men and women from the different churches and various occupations. These general meetings were held monthly at the parlors of the different churches, and, though large, did not lack freedom. Meanwhile the sections, or “neighbor-

hood circles" of half a dozen or more members, held more frequent and strictly conversational meetings, which are reported to have been delightfully social.

In San Francisco, different churches, rather than neighborhoods, were the centers of their subordinate circles. A concerted plan of study was pursued by means of uniform examination questions. Electric-pen copies were distributed to the members for study a week in advance, and the recitations at the local circles were from these; the general city circle re-examining on the same questions at the monthly meetings. Beyond the use of these questions, each circle adopted its own methods. Success seems to have been largely in proportion to their flexible social character. It is saying much, that persistence and interest could be kept up in the face of all the distractions of a large city.

In San José the system pursued was much the same as that of Oakland. The general meetings were mainly devoted to lectures, essays, and readings. A programme committee of three provided for these exercises. Special care was taken by this committee to call out members of the society who would never of their own accord have ventured public essay. Not a little coaxing was sometimes necessary, but the result proved the wisdom of the plan. Some of our very best essays were written by business men or home-keeping ladies, whose training had not been especially in literary work. The effort developed powers unknown to themselves, and did them good; while variety and interest were given to the work of the society. For instance, when reading English history, a charming essay on the Celts and the Degree of their Subjugation by the Anglo-Saxons, presented by one of our ladies, was a careful study in an obscure period of history, giving the rest of the society fresh ideas on a subject they would not have had time to investigate for themselves. So a vigorous and valuable article on the Three Religions of England—Druid, Saxon-mythological, and Christian—and their influence on the national character and institutions, was prepared in moments gleaned by a business man from engrossing occupations. Some of the other subjects of essays may prove suggestive. The growth of the English Parliament, a subject few persons would feel like attempting, happened to have been a special study with one of our members, and the rest of us thus got the benefit of her work. A member who would not have undertaken so extended a study as the last, gave a bright sketch of the life and character of Milton, which was followed by readings from his poems by another member. Yet another of our members shared with us the benefit of European travel, by an essay on Westminster Abbey and its Historical Associations, illustrated by a large blackboard plan, photographs and engravings.

Meanwhile the neighborhood circles met weekly for discussion of the subjects of study. One circle will serve as a type of what may easily be accomplished. A dozen or fifteen C. L. S. C. members, living within a radius of two or three blocks, met at the different homes in rotation. Each week a leader was chosen from their number to conduct the next meeting, and a definite portion of the history, or other book studied, was assigned for a lesson. This leader prepared topical questions on slips of paper, which were distributed

to the members, sometimes a week in advance, but usually at the time of recitation. After the member had told what he knew, or considered most important, on his topic, it was open for general discussion. So informal and neighborly were these meetings, that no one was afraid to say "I don't know," passing on the topic to the next, or throwing it upon the whole circle. It was surprising how these talks served to fix what had been learned, and to call out new views. Indeed, the whole neighborhood sociability took on a somewhat new character. It had never been reduced to weather, dress, and servants as topics of conversation; still, the broadening influence of common interest in a certain line of study was apparent in the frequency with which the subject of reading came up in the parlors, or even when meeting on the street.

One of the most faithful of our neighborhood circles consisted of just three members, and was purely conversational in character. So valuable was its work, that little knots of this size will form this year in various parts of San José not conveniently near the large circles.

During the three months devoted to astronomy, the neighborhood meetings gave way to weekly lectures before the whole circle. We were so fortunate as to have in San José an enthusiastic astronomer, who kindly gave us a whole course of lectures instead of the one or two for which we ventured to beg. Prof. More's lectures were thrown open to the public, and attracted a large and interested audience. Just at the close, Prof. Proctor being on this coast, we had the pleasure of hearing him twice. The Normal School telescope, which is in Prof. More's charge, he has, with unflinching kindness, made available to those interested in astronomy.

So strongly has the value of the neighborhood circle made itself felt that the whole San José membership will this year be districted into the small circles, each of which will report at the general monthly meeting the number of members, character of work done, and any points of special interest.

These neighborhood circles afford example of what can be done in places too small for the large central organizations of the cities mentioned. One of the most interesting reports at the late Monterey assembly was from a country local circle of seven members, some of whom came five miles to the fortnightly meetings. A few essays were presented; the best work, however, proved conversational, and both pleasure and profit were found.

"How many members are there in your circle, Mrs. B.?" one lady was lately asked. "Two," was the prompt reply, "Mrs. B. and Miss B." "Yes," smilingly added the daughter, "Mother reads to me while I work, and then—she reads to me while I work. Busy as we are, we manage in this way to get through the reading." Other mothers and daughters could be named who read together in the same way. So a young school-teacher, who has carried good of many kinds into her district, found some of the members of the family with whom she boarded glad to read with her, and pleasant were the long winter evenings. So a husband and wife read the course together, though the husband is a clerk in a store, with only the hour after nine in the evening at his command. A Bible-class teacher has interested some of the young men of her class in pursuing the course with her. Three teachers in a public school used

half of their lunch hour to compare notes on the readings and discuss points of difficulty. And so instances might be multiplied.

All these neighborhood, or church, or even family associations get the quickening influence of the reaction of mind on mind. They have the advantage over similar associations of the ordinary "reading circle" kind, that they are branches of a great tree, whose vitality courses through the whole. It is something to know, that though you are but half a dozen in number, you have twenty thousand fellow-students scattered over this broad land. In moving from one place to another you find the same work going on, and fall into it naturally. The Summer Assembly is yours, even if you can seldom be present; and the publications of the society may bring you their words of cheer.

It is easy to see that various other helps may be gained from these local circles. Books of reference can be owned in common, allowing the purchase of those too expensive for the individual purse. Magazines, and the valuable cheap editions of standard works, now so common, may be interchanged. Scientific collections can grow up. In short, ingenuity and energy will find numberless new developments of the power of these local circles. The very variety of subjects studied, which is in some respects a disadvantage, serves to call out people of different tastes and acquirements. New circles are being formed in many parts of the State. By the end of another year their experience will be very valuable. It is hoped that all these circles, however small, will report to the California Secretary of the C. L. S. C. at least three times a year the number of members and character of work pursued. The lonely members, for whose benefit the society is no less designed, are also urged to write occasionally to the California Secretary. Thus it will be possible to know just what the C. L. S. C. is accomplishing on this Coast, and to mold its future work in accordance with the lessons of experience.

The second year's course of reading in the C. L. S. C. begins with October. The first three months are devoted to Roman History and Literature. Merivale and Lawrence being the author's studies. The California Secretary, L. M. Washburn, San José, will furnish circulars giving further particulars.

In *Harper's Weekly* for August 21st may be found pictorial illustrations of Chautauqua, with a sketch of the growth of the famous Assembly.

THE Irish University bill provides that the honors and degrees of the new *Irish University* shall be open to women as well as men. A society has been formed to procure the endowments of scholarships and other means of aid for the higher education of women in Ireland.

EDITORIAL DEPARTMENT.

PENNY-WISE—POUND-FOOLISH.

SOME of our more intelligent and well-meaning newspapers, like the Sacramento *Record-Union*, occasionally speak sensible words about education. But on two points they are strangely silent. On the first, the salaries of teachers, we have written often and earnestly. We again urge that ordinary business rules be applied to the hiring of teachers. We hold it undeniable that the principles of political economy apply to the conduct of schools controlled by the State, precisely as if they were managed by private enterprise and for individual profit.

Good teachers—male and female—demand good salaries. By a good salary, we mean a sum not sufficient merely to secure the necessaries of life, nor even some of its luxuries, but an amount large enough to secure all these, and in addition to lay up some small protection “’gainst a rainy day.” It is the wisest economy in the State to pay salaries which will enable all her careful employees to do this. A system of pensioning teachers, though there are many arguments in its favor, would not be necessary, if this wiser, broader policy obtained. But not alone as a matter of keen foresight does this argument recommend itself. Teachers are now the most underpaid servants of the State. All compensation is in proportion to responsibility, labor, preparation required, and the relation of demand and supply. Go into any large public office, where the salaries of the clerks average double that of the teacher, and ask yourself these questions: How many of these clerks could go into a public school and successfully teach any of its classes? The answer would be, Not one. Another question: How many teachers could go into this hall and do the work of these clerks as well as it is now done? The answer is, Nine out of ten. Another: What proportion of the community could more easily do the work here than in the school-room? Answer, As ten to one. Another: In whose favor is the balance of culture, refinement, influence on the time, on civilization itself? Certainly, on the teacher. Does the community—does the press—ever consider these questions? It would appear not; else this general solicitude about sound education must be a farce indeed!

We reiterate: good teachers will work for good salaries only. In the prevailing ignorance and indifference, there is a strong and successful tendency to press the good teachers—the only *teachers*—out of the vocation, and supply their places by a substitute, cheap in every respect. This is not the way men and women do business generally. No person of common sense will buy a worthless article merely because it is cheap. One hundred cents for a dollar’s worth is better economy than one cent for little more than nothing.

Another piece of equally penny-wise-and-pound-foolish economy is manifested in the overcrowding of classes in all our public schools. Fifty to sixty, and often seventy, children are huddled together, and expected to be intelligently taught by one single, unaided personality.

It is physically and mentally impossible. Plato could not do it; no mortal can. The result can only be a slipshod habit of study, and a superficial acquaintance with the subject to be learned. As we go into our public schools and see the little multitudes, we wonder not that our teachers do no more, but that they accomplish so much.

The community is certainly ignorant of the conditions essential to actual teaching. Personal contact of mind to mind is necessary. The good teacher must place herself *en rapport* with every individual mind before her. She must sway them and lead them. They must work in unison of soul with soul.

This process requires skill, refinement, sensibility, as well as culture. It is exhaustive to teacher and child alike. It exercises every mental faculty, where properly pursued, just as gymnastics develops and strengthens the physical being.

This is what teaching really is. How few except the best teachers have ever realized it!

Is not the community wasting time, money, cheating itself, and undermining the strength of the young by a system of slow, mental starvation? Thirty children is the limit of ordinary teaching power. With that number, the mental powers may be developed, and those tastes strengthened which will enable the learner to educate himself.

We beg the intelligent part of our people to attend to this important matter. This overcrowding of classes is a useless drain on teachers, without any compensating influence on children. The former are robbed of enough nervous force in a day to suffice for the work of a week; and among the many eager little minds around, it is so scattered and thinned, that the greater part is but waste.

Here is a terrible loss of power! And what is the compensation? Absolutely nothing. The best people know that something is wrong, but they cannot or will not see what.

We have here pointed out to press and people two crying evils. We challenge disapproval of our arguments. We are certain of our facts. Now, what will the community do about it? Will they rest satisfied, allow ignoramuses to control their schools, and continue to grumble when the bills are brought in? Will they abuse conscientious and too-patient teachers, when the fault is solely with themselves? Will they make each succeeding generation more superficial, more averse to labor—mental and physical—than the last? Or, will they be more honest, more true to themselves and to their offspring, resolve to investigate this question of education, and learn that there, as in every department of art and science, progress has been made and principles formulated, on the observance of which depend the proper results to be expected, and the well-being of society itself?

OUR PRIMARY SCHOOLS.

WE occasionally grow apathetic over some portion of the educational system even here in California. At present, it is the lower primary grades that suffer from neglect and indifference. Why will not our Boards of Education realize that the very corner-stone of the system is the lowest primary grade? How can the foundation be laid deep and strong, unless the best teaching talent, the most wise, motherly, humane efforts, are exerted with the little ones fresh from the home!

The policy that places the lowest primary grades in the hands of young, unskilled teachers is worse than idiotic—it is wickedly insane.

The Legislature, some years ago, passed a wise law providing that teachers of the lowest grade should be paid the same salary as those of the highest. This law

was at least partially observed until the present San Francisco Board of Education, in their hasty, ill-considered, and ill-tempered revision of the salary list, swept away at a breath all that the experience and wisdom and humanity of a generation had established.

The most responsible position in the whole free-school system—"from the gutter to the university"—is now paid the lowest salary. Experience, which in every other position in life is made to tell, here counts for nothing. We are curious to hear the gentlemen who advocated this scheme, who brought about this condition of things, step forward and explain their action. We do not believe they can do it.

A KIND GREETING.

A GENEROUS recognition of honest effort is welcome and touching to the journalist, particularly when it comes from a contemporary acknowledged as at the head of the profession. So the following appreciative sentences from our able and universally respected exchange, *The Educational Weekly*, of Chicago, touch a tender chord in the editorial heart. It gives us the deepest, most unselfish pleasure to know that our efforts in the cause of a higher educational development are acknowledged and approved by our greatest educators East, as well as by those nearer home. We trust that our continued efforts, and more perfect performance in the future, will justify the kind speech and good wishes of our friends.

"THE PACIFIC SCHOOL AND HOME JOURNAL, of San Francisco, one of the best monthly journals ever published for teachers, makes an eloquent and reasonable plea for general and unflinching support, in anticipation—if not in the midst—of a vigorous effort to cripple its efficiency by the establishment of one or two rival journals, claiming the same State aid which had been virtually provided for the JOURNAL. We believe the intelligent educators of California are faithful friends of the JOURNAL, and will prove themselves as faithful adherents. There is no educational journal published in this country superior in the matter it contains, or in its style of publication. To encourage a hostile rivalry, or to permit any pecuniary embarrassment to be felt from lack of general support, would be a discredit to the teaching force of the Golden State.

"After writing the above, we find in the Supplement to the JOURNAL, dated July 15th, that it was that day 'designated by the State Board of Education as the Official Organ of the Department of Public Instruction.'

"This insures a handsome income, and will enable the enterprising publisher, Prin. Albert Lyser, to still further improve what is already a superior journal."

The following from the *Sacramento Advertiser* is likewise heartily appreciated:

"The September number of the PACIFIC SCHOOL AND HOME JOURNAL is now before us, and shows marked improvement. No educational journal on the continent has been more zealous in the cause of education than this noble representative of our coast. And to the untiring energy and persevering efforts of Prof. Albert Lyser belongs the great honor of this success. The State Board of Education did well in selecting so able and faithful an exponent of the education of our State for their organ; and may the star of prudence guide them as well in other things."

TO SUPERINTENDENTS.

IF superintendents will give us prompt notice of the time fixed for holding their Institutes, we will make the announcement in the JOURNAL. We are prepared to furnish help in conducting the daily sessions, or for evening lectures. Educational intelligence, the movements of teachers, etc., are also earnestly solicited. We trust superintendents will give us their active support in our endeavors to make the JOURNAL of general interest and value.

BILLS.

MR. SAVAGE, our business manager, has been very active in sending out bills against subscribers for the current year. We hope subscribers will be equally active in response.

We notice, (though very rarely) that sometimes a teacher will move from one county to another without giving any notice of change, and in arrears for the JOURNAL. Of course, this is rather a "small business." If a teacher wishes to discontinue the JOURNAL, all he need do is to pay up and order it stopped. But it savors of meanness to permit us to send, month after month, to a locality, only to find after a year has passed that the person addressed has long been gone. We propose to deal fairly and broadly with teachers and the cause they represent. All we ask is the same treatment in return.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

DEPARTMENT OF THE INTERIOR, BUREAU OF EDUCATION,
Washington, D. C., September 7th, 1880. }

DEAR SIR—State Superintendent Slade of Illinois has just sent to this Bureau the following note :

"In making up statistics in this office, my attention has been called to two ways of reaching averages of teachers' wages. For instance, if two teachers are employed in a township, one at \$60 a month and the other at \$100, the average may be stated to be \$80 a month. Or, the first, being employed six months, receives \$360; the second, being employed ten months, receives \$1000; making a total payment for sixteen months of \$1360, an average of \$85 a month.

"This last is the average which has heretofore been sought in this State. It occurs to me to ask you whether this is the practice in other States. If the practice is not uniform throughout the States, comparison of averages cannot be fairly made; for since, as a

rule, the teachers who receive the higher wages are employed for the longer terms, the second way stated will give a higher average than the first."

Agreeing with Mr. Slade as to the desirableness of a uniform method in order to a fair comparison of results, I should be pleased to be informed what is the method used in your office, and will in turn inform you in due time what are the replies received from other offices.

Very respectfully, your obedient servant,

CHAS. WARREN, Acting Commissioner.

I do not find that any plan has ever been agreed upon, or directions given for the guidance of county superintendents in determining this item of statistics.

Statistics, to be of any value for purposes of comparison, must of course not only be entirely accurate, but a uniform plan or system must be followed in obtaining them. The average salary paid in the State is found from the averages furnished this office by the county superintendents; but how these last have been found heretofore we do not know. The State Superintendent will be pleased to receive from each county superintendent a brief statement of the plan which he has followed in this matter. Before the next reports are to be made, a uniform system will undoubtedly be agreed upon at the Washington office.

Concerning the time for holding the State Convention of Superintendents but two replies have thus far been received at this office. Below is one of them, which is published as expressing the opinion of one in a remote county:

SAN BUENAVENTURA, September 15th, 1880.

HON. FRED. M. CAMPBELL, *State Supt. of Public Instruction, Sacramento:*

DEAR SIR—I see by the PACIFIC SCHOOL AND HOME JOURNAL that you are desirous of ascertaining from the county superintendents when, in their opinion, it would be best to hold the "Convention of County Superintendents," as provided by law. So far as I am concerned, I think that the *first of January* would be best for all parties concerned. Several county superintendents (myself included) follow the occupation of teaching; and it is probable that the first of January would find them enjoying their vacation. A trip to Sacramento at that time would probably not interfere with their official or school-room duties. Superintendents who reside in remote portions of the State are placed in a position entirely different from those who live in the vicinity of San Francisco and Sacramento.

I am positive that I could not arrange my affairs so as to leave this county in November.

Very truly,

D. D. DE NURE, Superintendent of Schools, Ventura County.

The other is from Superintendent Augustine of Marin County, also favoring January

SCHOOL WARRANTS DRAW INTEREST.

OFFICE OF ATTORNEY-GENERAL, CAL., September 6th, 1880.

HON. FRED. M. CAMPBELL, *State Superintendent of Public Instruction:*

DEAR SIR—Under the amendment of Sec. 1543, Political Code, warrants against the School Fund, like all other county warrants, are issued by the County Auditor; and it is my opinion that school warrants are to be registered and bear interest under the provisions of Sec. 4148 of the same Code.

Yours very truly,

A. L. HART, Attorney-General.

HIGH SCHOOLS AND UNIVERSITY.

We all know that a great organized work, like that of our public education, depends for its success on the perfect co-ordination and harmony of the whole system. It is not enough that the parts should work well as disjointed parts; they must work well together. Indeed, this is understating the real truth, which is, that no separate part can work well

except in harmony with the whole. The grammar school must look forward to the high school, and the high school to the university, or to life. Nor is this true merely as to the preparation to pass into the next higher course by a successful examination; but chiefly as to the fitness to master, and enjoy, and make the most of its successive studies. Nor is this all; each course, if good for anything, should awaken in a boy a keen desire to push forward and master the next. That course which leaves a pupil with the self-satisfied sense of having attained all that is desirable, is a poor course. And that teacher who leaves with his pupils the impression that he is the wisest of men, and that no further men nor books are necessary, is a poor teacher. One of the best tests of a thoroughly good teacher, in any grade, is the ability to inspire in his pupils a longing for further and higher opportunities. All grades, even the highest, are only preparatory to the real self-education of life. So that the best thing that a student gets from his college course is the power and determination to go on by himself afterward. It is one of the finest privileges and opportunities of a teacher to kindle in his boys and girls a genuine enthusiasm for this higher education. Every one, for example, who is teaching high-school studies should inform himself as to the university, not only as to its requirements for admission, but as to its courses of study, in order to arouse an interest in them and a desire for them. Many a bright, energetic boy and girl in all our cities and towns might as easily as not go on and attain a thorough education in letters, or in science, or in both, if only this is suggested to them, and set before them as the tempting prize it really is. The public schools and the university are parts of the same system, and in every possible way they should be brought into close relations of mutual co-operation. With this in view it is the intention of the State Superintendent to bring about at an early day a conference of high-school and university teachers, to consider plans for more perfect co-ordination and mutual help. Meantime he would be glad of any suggestions looking toward this most desirable end.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. MCCHESENEY, to whom all communications in reference thereto must be addressed.

M. ADER communicated to the Académie des Sciences, July 12th, the conclusion, drawn from his experiments, that every mechanical action having the effect of disturbing the state of molecular equilibrium of a magnetic nucleus develops at the moment when such nucleus returns abruptly to its condition of equilibrium an electric current capable of acting on the telephone.—*Athenæum*.

MISS ARABELLA B. BUCKLEY, author of the "Fairyland of Science," has in press the first part of her new book, entitled "Life and Her Children." It is intended for young people, and gives an account of the structure and habits of the invertebrate animals.—*Athenæum*.

M. PASTEUR has received from the French government the sum of 50,000 francs in aid of his researches on the contagious diseases of animals.

COMPARATIVE HEAT OF ARIZONA.—A Tucson correspondent of the *Record-Union* has this to say of the heat in Arizona: The months of June and July are the hottest months. This year the thermometer has at no time during these months, or at any other time, risen to 110 deg., according to the signal station report. Ordinarily the thermometer ranges from 85 to 100 deg. during the warmest portions of the day. I have found no heat in the

Territory as oppressive as that of Marysville and Oroville, California. The nights are cool and delicious; many persons sleep in the open air; whole families occupy the sidewalks, perfectly secure from all intrusion.

TRIANGLES. —We do not recollect ever having seen any rule for obtaining the length of side of an equilateral triangle of known area. Although a simple problem, and perhaps of but occasional use, we have arranged a convenient rule for its solution. To obtain the length of side of an equilateral triangle, the area being given, multiply the area by .57735, and take twice the square root of the product for the length of side. A line bisecting an angle and equally dividing the area of an equilateral triangle, in other words, a perpendicular raised midway of the base, is .866025 of a side.—*Exchange*.

A NEW ELECTRICAL PRINCIPLE.—Prof. Lemström, of Helsingfors, has made the singular observation that a ring of insulating material, when rotated about its axis of symmetry with a high velocity, acts like a galvanic circuit, and produces a magnetic "field" in the space within it. This experiment is quite inexplicable, and London *Nature* is disposed to regard it as a fundamental fact in the physical theory of electricity.

TELEPHONE experiments with a new apparatus by Dr. Herz have been made with the French Atlantic cable between Brest and Penzance, and are said to have yielded satisfactory results.—*Nature*.

ACCORDING to the *Electrician* a remarkable instance of telephony is exciting considerable interest throughout South Australia and among the scientific world in particular. By means of an improved telephone the Adelaide Post-office chimes have been clearly heard at Fort Augusta, a distance of 240 miles.

FROM a late number of the *Evening Bulletin* we clip the following: "The last number of the *Medical Record* contains a notice of a new and curious method of deadening pain, which is of striking simplicity. It was discovered by Dr. Bonwill, a dentist of Philadelphia, in 1875. In 1876 Dr. A. Hewson made a favorable report of his experience with it to the international Medical Congress, and at a recent meeting of the Philadelphia County Medical Society several papers were read on the subject, and much discussion followed. In using the method, the operator merely requests the patient to breathe rapidly, making about 100 respirations per minute, ending in rapid puffing expirations. At the end of from two to five minutes an entire or partial absence of pain results for half a minute or more, and during that time teeth may be drawn or incisions made. The patient may be in any position, but that recommended is lying on the side, and it is generally best to throw a handkerchief over the face to prevent distraction of the patient's attention. When the rapid breathing is first begun the patient may feel some exhilaration; following this comes a sensation of fullness of the head or dizziness. The face is at first flushed, and afterward pale, or even bluish; the heart beats rather feebly and fast, but the sense of touch is not affected, nor is consciousness lost. The effect is produced in females more readily than in males, and in the middle-aged more easily than in the old; children can hardly be made to breathe properly. It is denied that there is any possible danger. Several minor operations, other than frequent dental ones, have been successfully made by this method, and it is claimed that in dentistry, minor surgery, and obstetrics it may supplant the common anesthetics. Dr. Hewson's explanation is that rapid breathing diminishes the oxygenation of the blood, and that the resultant excess of carbonic acid temporarily poisons the nerve centres. Dr. Bonwill gives several explanations, one being the specific effect of carbonic acid, another the diversion of will force produced by rapid voluntary muscular action, and third, the damming up of the blood in the brain, due to the excessive amount of air passing into the lungs. The *Record* is not satisfied with the theories, but considers it well proved that pain may be deadened by the method, which it commends to the profession for exact experimental determination of its practice value."

THE PLANETS IN OCTOBER.—*Mercury* is an evening star, setting on the 7th at six o'clock P. M.; on the 17th at 5 h. 47 min. P. M., and on the 27th at 5 h. 40 min. P. M. He is near the moon on the 5th, and at his greatest distance from the sun on the 12th. *Venus* is an evening star, setting on the 7th at 6 h. 17 min. P. M.; on the 17th at 6 h. 11 min. P. M., and on the 27th at 6 h. 7 min. P. M. She is near the moon on the 6th, and in her descending node on the 11th. *Mars* sets on the 7th at 5 h. 46 min. P. M.; on the 17th at 5 h. 27 min. P. M., and on the 27th nearly with the sun; and after this time he sets in daylight. He is near the moon on the 4th and near the sun on the 25th. *Jupiter* rises on the 7th at about sunset, and from this time he rises in daylight. He sets on the 18th at 5 h. 46 min. A. M. and at 5 h. 6 min. A. M. on the 28th. He is in opposition to the sun on the 7th, and near the moon on the 17th. *Saturn* rises on the 6th at 5 h. 44 min. P. M., on the 17th at 4 h. 53 min. P. M., and on the 22nd at sunset. He is near the moon on the 18th, and in opposition to the sun on the same day.

To prevent saddle galls, the saddle should be lined with some smooth, hard substance. Flannel or woolen cloth is bad. A hard-finished, smooth raw-hide lining, similar to those of the military saddles, is preferable. Then, if the saddle is properly fitted to the horse's back, there will be no galls unless the horse is very hardly used. Galls should be washed with soap and water, and then with a solution of three grains of copperas or blue vitriol to one tablespoonful of water, which will harden the surface and help to restore the growth of the skin. White hairs growing upon the galled spots cannot be prevented.—*Nebraska Farmer.*

In a letter to the *New York World*, Mr. Seth Green states that one morning when he was watching a spider's nest, a wasp alighted within an inch or two of the nest, on the side opposite the opening. Creeping noiselessly around toward the entrance of the nest, the wasp stopped a little short of it, and for a moment remained perfectly quiet; then reaching out one of his antennæ, he wriggled it before the opening and then withdrew it. This overture had the desired effect, for the boss of the nest, as large a spider as one ordinarily sees, came to see what was wrong and set it to rights. No sooner had the spider emerged to that point at which he was at the worst disadvantage, than the wasp, with a quick movement, thrust his sting into the body of his foe, killing him instantly. The experiment was repeated on the part of the wasp; and when there was no response from the inside, he became satisfied, probably, that he held the fort. At all events, he proceeded to enter the nest and slaughter the young spiders, which were afterward lugged off, one at a time.

MATHEMATICS.

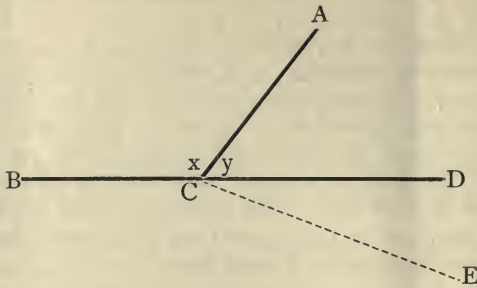
THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

Mr. J. F. Klenck, of San José, should have been credited with the first solution of Problem 32, in the September number of this JOURNAL.

We submit, on account of the novelty of its form, the following geometrical demonstration, taken from a pupil's examination paper :

If one straight line meet two other straight lines at a common point,

making the sum of the contiguous angles equal to two right-angles, the two lines met will form one and the same line.



Premises.—AC meets BC and CD at C, and $\text{ang. } x + y = 2 \text{ rt. ang.}$

Conclusion.—CD is a continuation of BC.

Hypothesis.—CE is a continuation of BC.

Then angle $x + \text{ACE} = 2 \text{ rt. ang.}$, (being supplementary-adjacent ang.)
 $\therefore x + y = x + \text{ACE}$, (things equal to the same thing are equal to each other.)
 Subtracting from these equals the common ang. x , we have the

False Conclusion.— $y = \text{ACE}$, (or a part equals the whole) \therefore the hypothesis is false, and its contradictory, or the first conclusion, is true. Q. E. D.

The following is contributed by a teacher of this city:

Analysis for changing the sign of the subtrahend in subtraction—

Let a represent the minuend; $-b$ the subtrahend, the operation being indicated thus: $a - (-b)$.

$$\text{Let } a - (-b) = c, \quad (1.)$$

Adding $-b$ to both members,

$$a - (-b) + (-b) = c + (-b),$$

$$\text{Or,} \quad a = c - b \quad (2.)$$

Adding $+b$ to both members,

$$a + b = c \quad (3.)$$

The first members of (1.) and (3.), being each equal to c , are equal to each other; hence,

$$a - (-b) = a + b$$

Mr. Sturgis, of this city, submits—

PROBLEM 33.—Borrowed a sum of money at 9 per cent., simple interest, and loaned it out again at 7 per cent., compound interest; in what time shall I gain the amount borrowed?

Mr. C. B. Bradley, of Oakland, sends still another solution of

PROBLEM 32.—To find two fractions, whose sum is $\frac{8}{5}$, and the sum of whose numerators shall equal the sum of their denominators.

The solution of this problem requires not merely the values of the fractions, but their exact terms. We notice—

1. The two fractions are not equal, nor equivalent; for then would $4+4=5+5$, or $4m+5n=5m+5n$; both of which are impossible.

2. The two have not the same denominator; for then would $8=10$, or $8n=10n$; both of which are impossible.

3. The denominator of the larger is not 5; for if it were, the larger fraction must be either $\frac{5}{5}$, or $\frac{6}{5}$, or $\frac{7}{5}$, and the smaller one must be $\frac{3n}{5n}$, or $\frac{2n}{5n}$, or $\frac{n}{5n}$.

On these hypotheses the conditions require that $5+3n=5+5n$, or $6+2n=5+5n$, or $7+n=5+5n$. The first conclusion is impossible, while the second and third make the factor $n=\frac{1}{3}$, and $n=\frac{1}{2}$; neither of which is admissible, if we limit the terms of the fractions to integers.

Applying these conclusions to the construction of the equation—

Let x = the numerator of the larger fraction, and n = the coefficient of 5 in its denominator. Then its expression will be $\frac{x}{5n}$. By subtraction from $\frac{8}{5}$, the *value* of the less fraction will be $\frac{8n-x}{5n}$, while its exact terms will be represented by $\frac{m(8n-x)}{5mn}$, in which m is the ratio between the

denominator of the less and the denominator of the greater. The only condition imposed in the problem is that the sum of these numerators shall equal the sum of the denominators—that is, $x+m(8n-x)=5n+5nm$. We have, then, a single equation with three unknown quantities. The problem, therefore, is doubly indeterminate. Not merely can one series of pairs of fractions be found to satisfy the conditions, but there are many such series. To illustrate the method of investigating such a problem, we will suppose that the fractions are limited to those whose terms are all positive whole numbers; n will then be integral and greater than unity; m will be fractional and less than unity, for from the equation stated above we find

$m = \frac{x-5n}{x-3n}$, a fraction whose numerator is less than its denominator. It is

plain that x can never quite equal $8n$, for then would the part equal the whole. Neither can it be so small as $5n$, for that involves the absurdity $5=3$, as shown in note 3rd above. Substituting these values for x in this last equation, we shall find the limits which m can never quite reach—namely, $\frac{2}{5}$ and 0. For any assignable value of m within these limits, a series of pairs of fractions may be found to satisfy the conditions. Thus if

we take $m=\frac{1}{5}$, we have $\frac{1}{5} = \frac{x-5n}{x-3n}$; whence $x = \frac{11n}{2}$, and the other numerator,

which we will call $y = \frac{n}{2n}$. These expressions will answer for any value of n

which is divisible by 2; and we have the series $\frac{1}{1} \frac{1}{0}$ and $\frac{1}{2}$, and $\frac{2}{2} \frac{2}{0}$ and $\frac{2}{4}$, and so on *ad infinitum*. In like manner, if $m=\frac{2}{5}$, we find $x = \frac{19n}{3}$ and $y = \frac{2n}{3}$; possi-

ble for any value of n which contains the factor 3. Thus $\frac{1}{1} \frac{9}{0} + \frac{2}{0} = \frac{8}{5}$, etc.

If $m=\frac{1}{3}$, $x=6n$, and $y=\frac{2n}{3}$; possible whenever n contains the factor 3.

The fractions then will be $\frac{1}{15}$, and $\frac{2}{5}$, $\frac{3}{30}$ and $\frac{4}{10}$, etc. When $m = \frac{1}{10}$, $x = \frac{47n}{9}$, and $y = \frac{25n}{90}$, n must then contain the factors $3 \times 3 \times 2$, and the fractions are $\frac{9}{90} + \frac{5}{9} = \frac{8}{9}$, etc. The only limit there seems to be to such investigation is the limit of endurance in the student.

We have on hand favors from Messrs. Klenck, Parsons, Towle, Heald, and Jared, which are hereby gratefully acknowledged. For various reasons it is often impossible to publish communications in their chronological order.

BOOKS RECEIVED.

FROM BARNARD BROS.

COMPREHENSIVE GRAMMAR (\$1.50).—*Henry Barnard.*

FROM PAYOT, UPHAM & CO.

BROWNING'S MODERN FRANCE (25 cts). Harper Bros.

FROM BILLINGS, HARBOURNE & CO.

MR. BODLEY ABROAD. Houghton, Mifflin & Co.

FROM A. L. BANCROFT & CO.

METHODS OF TEACHING (\$1).—*John Swett.* Harper & Bros.

NEWS RECORD.

Personal.

Mr. Gladstone's eldest daughter, Agnes, is the wife of the Rev. E. E. Wickham, head-master of Wellington College.

Extremes meet. The daughter of the Rev. Samuel and Sarah Bradford Ridley, Jane Francis Ridley, is the present directress of the oldest convent school in the United States—the Visitation Academy at Georgetown, D. C., which was founded in 1799. The lady, who is the cousin of the late distinguished critic, George Ridley, is the direct descendant of Governor Bradford, of *Mayflower* fame, and the cousin of Ralph Waldo Emerson.

Dean Stanley is preparing a series of essays on ecclesiastical subjects, entitled "Christian Institutions."

Prof. Spencer F. Baird, of the Smithsonian Institution in Washington, has been connected with that institution for thirty years, his labors being chiefly confined to birds and fishes.

Mr. Herbert Spencer, the well-known scientific writer, intends, it is said, next year to make a tour around the world, by way of the United States and Japan.

Mr. Ruskin has been selling his cast-off books, and owing to the fact of his writing in them such sentences as were to be read on the fly-leaf of Demosthenes' orations—"Old school trash, never read a line of it," and on that of Pliny, "Poor stuff, not worth the paper it's printed on"—the books brought twenty times their value.

Justice Miller, of the United States Supreme Court, it is said, rests himself by

reading novels. He was thirty years old before he began to study law. Previously he was a physician.

Young authors should not be disheartened in view of the fact that Thackeray was not known as an author until he was nearly forty; Scott was forty-three when *Waverley* appeared; Defoe was fifty-eight before he wrote his first novel; and other notables were equally tardy in gaining celebrity.

Among the graduates of Abbott Academy, Andover, Mass., who have won distinction in letters are, Elizabeth Stuart; Elizabeth Stuart Phelps, her daughter; "Madeline Leslie"; Miss Fletcher, the author of "Kismet" and "Mirage"; and "Octave Thanet."

A young lady in Michigan has become a law partner with her father, and the firm name is Coolidge & Daughter, Attorneys and Counselors-at-Law.

Dr. Herz has made the trial of a submarine telephone, with great success. His invention has carried a voice three hundred miles inland.

Owen Brown, the son of John Brown, lives in Gibraltar, the Lake Erie home of Jay Cooke. He is described as tall and stooped-shouldered, with a sandy beard in which lie a few streaks of white, blue eyes, a pleasant voice, and an air of gentleness. One could hardly imagine he had played a part in such troubled scenes in Kansas and the South. He is a bachelor, and likes the lonely life he leads.

Educational.

One-third of the students that entered Princeton last year were Episcopalians; and there were some Catholics and Jews.

Agassiz used to say that he hoped the time would come when every primary school would have its little museum of natural history. So every common school ought to have its little technological museum, which might easily be begun with a collection of metals in various forms, and of woods in various stages of manufacture.

St. Louis has 978 teachers in her public schools, and 51,558 scholars. There are 18,692 studying German, a decrease of 963 since last year, which we are glad to see. The employment of colored teachers in the colored schools has increased the attendance.

At the June examination of the Harvard College, 238 applied at Cambridge, 10 at Cincinnati, and five at Chicago, being 253 in all. Of these, 217 were admitted. The incoming freshman class will be the largest ever admitted.

The School Board of Charleston, S. C., has accepted the proposition of Bishop Lynch, supporting from the public treasury a separate Catholic school, the teachers of which are supported by Catholic authorities.

Germany has one in seven of its population in school, Great Britain one in eleven, Austria one in eleven, France one in nine, Spain one in eleven, Italy one in fifteen, Russia one in sixty-seven.

Prof. Ko had one Chinese scholar at Harvard last year. He made good progress, and has now gone to China to engage in business.

Harvard University has 14,062 graduates, of which number 2,344 were ordained as pastors of churches.

It has often been said in England that too much was spent on education. But in Mr. Mundella's statement, introducing the estimates for education to the British House of Commons, he showed that, while rich England pays \$10.50 per scholar in the board schools, poor Scotland \$10.87; and while England pays in the voluntary schools \$8.52 per scholar, Scotland pays \$9.50; so that the poorer country, valuing education most, pays more for it than the richer country. So in fees paid by the parent, Scotland pays considerably more per pupil than England. So Scotland pays more attention to the education of the older scholars, and Mr. Mundella shows that England needs to learn important lessons from north of the Tweed.

Judge Hilton and Mrs. Stewart have caused endowments to the amount of probably three million dollars, it is said, to be made to establish a collegiate institution at Carden City for youth of both sexes. One building is now nearly completed, which is said to be the finest structure of its kind in America and to accommodate 500 students. Two other buildings of equal capacity will be erected near it, in a park of sixty acres. A building for young women, to accommodate 300, will be erected in grounds of 20 acres. An Episcopal divinity school is also planned. The whole to be transferred to the charge of the Bishop of Long Island, when completed.

General notes.

It seems that the newspapers cannot sufficiently arouse the Boston ladies to a sense of their duty or privilege, whichever it may be deemed. A club has recently been formed in that city to secure the co-operation of ladies in the cause of school suffrage, and to induce them to vote at the fall elections. Perhaps they need the stimulus of "clubs" as well as the gentlemen.

"What is the origin of the sign '\$' for the American dollar?" was the question propounded at a London dinner not long ago. The American consul did not know; neither did any one else. An extensive research resulted in this theory: The American dollar is taken from the Spanish dollar, and the sign is to be found, of course, in the associations of the Spanish dollar. On the reverse side of a Spanish dollar is a representation of the Pillars of Hercules, and around each pillar is a scroll, with the inscription, "*Plus ultra.*" This device in the course of time has degenerated into the sign which stands at the present for American as well as Spanish dollars—"\$. " The scroll round the pillars represents the two serpents sent by Juno to destroy Hercules in his cradle.

The "Children's Summer Home" at Bath, Long Island, is doing a noble work for little girls in giving them a week of un-

alloyed happiness, and a glimpse of country life. Over seven hundred girls, taken from the tenement-house districts, have been entertained there during the summer.

The powers of entail in England were restricted in consequence of the will of Mr. Theissou, a Swiss merchant in London, who intended his vast fortune—which he had made in part from the purchase of jewels of the French *emigres*—to accumulate till it reached seven hundred million dollars; and it being thought undesirable that any subject should have such wealth, Parliament passed a bill limiting entail to life and twenty-one years thereafter. Contrary to general belief, there is no such thing as a law of primogeniture there, but merely a custom. If he pleases to do so, a duke may leave his fortune to his valet. The estates of the Duke of Hamilton and of many other nobles are entirely unentailed.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SAN FRANCISCO COUNTY.

An interesting programme of literary and musical exercises was given by the pupils of the Columbia Street Grammar School, on the evening of September 24th, which reflected great credit on the principal, Mrs. Margaret Deane, and her teachers. The programme was not too long, the selections were new and chosen with judgment and taste, and recited in a manner which denoted careful drill. Many of the participants were little eight and seventh grade children, and the simple manner in which they played their parts was delightful in the extreme. The exhibition was financially, as well as every other way, a success. The school library will be benefited to the extent of more than \$100 by the proceeds.

An extensive and highly interesting programme was executed at the Broadway School the 23rd ult. by the first and second Grammar grades. Diplomas and medals were distributed among the girls who graduated last May.

The graduating exercises of the Valencia Street Grammar School, held the 16th ult., consisted of music, recitations, addresses, and distribution of diplomas by Principal Silas M. White.

Many of the teachers in the department attend the free lectures in Elementary Chemistry given by Prof. W. B. Rising at Berkeley each Saturday at 10 A. M.

Mrs. M. J. Carusi and Mrs. S. A. Miles have been transferred from the Broadway Grammar School—the former to the Ocean House School, and the latter to the Valencia Street Grammar School.

Mr. Geo. A. Waterbury, who for several years has been connected with Gilbert & Moore, has severed his connection with them and gone in with Mr. Geo. H. Fuller, No. 19 New Montgomery street, San Francisco, in the manufacture of school furniture, of every description, where his friends will meet with a cordial reception by himself and Mr. Fuller.

ALAMEDA COUNTY.

The Teachers' Institute will be held the 12th, 13th, 14th, and 15th inst. A feature of the session will be a visit to the San Francisco public schools on Tuesday and Wednesday. Prof. Norton lectures on "Mind Building," at the Independent Church, Thirteenth and Jefferson streets, Oakland, Wednesday evening.

The Institute will be organized at the Oakland High School, Thursday at 9:30 A. M. 9:40 A. M., Introductory remarks by Superintendent Gibson; 10 A. M., Physiology, by Prof. H. B. Norton; 11:30, "Some Hints," by O. S. Ingham; 1:30 P. M., Physics, by Prof. Norton; 2:30, Address by Hon. F. M. Campbell; 3:30, "Thoroughness," by W. H. Galbraith; Thursday evening, lecture, "Classical Side of English," Prof. Martin Kellogg, at the Independent Church. Friday, 9 A. M., Normal Primary Methods, by Miss M. J. Titus; 11 A. M., Reading, by Prof. Chas. H. Allen; 1:30, Spelling.

AMADOR COUNTY.

The Ione school opened the 20th ult. with a full attendance; also the Union school, with Miss Augusta Withington as teacher.

BUTTE COUNTY.

Hon. F. M. Campbell and Prof. E. Knowlton will conduct the Teachers' Institute announced at Oroville the 17th prox.

FRESNO COUNTY.

Fresno City school opened the 6th ult. with 4 teachers and 160 scholars.

HUMBOLDT COUNTY.

A very interesting and profitable session of the Teachers' Institute was held at Eureka the 1st, 2nd, and 3rd ult. Superintendent Casterlin expressed great satisfaction at the progress made during the year, and complimented the teachers upon the very general disposition to co-operate in all efforts for the improvement of the schools.

KERN COUNTY.

Mr. G. W. Hursh has accepted the principalship of the Sumner school.

LOS ANGELES COUNTY.

The Teachers' Institute will convene Monday, the 8th prox., at Los Angeles.

Messrs. Yarnell, Caystile & Mathes offer \$50 in premiums to the pupils of public schools in Southern California, as follows: For best essay, \$20; best recitation, \$10; best song, \$10; best map of California, \$10. The exercises will take place in the Los Angeles Pavilion the 19th inst.

MONTEREY COUNTY.

The Teachers' Institute will be held the 26th, 27th, and 28th inst., providing the dates do not conflict with Institute announcements in other counties. Superintendent Campbell, Hon. John Swett, Principal Allen, and other educators of note are expected to attend.

Miss Hattie Sargent and Miss Dauglada deserve great praise for the admirable manner in which the school children were trained at the reception of President Hayes at Monterey.

MERCED COUNTY.

Prof. Beacher is teaching writing at Merced.

MARIPOSA COUNTY.

The people of Mariposa are to be congratulated upon securing the services of Mr. Geo. S. Wells, as principal of their school. Mr. Wells is a gentleman of ability and has an excellent record as an educator.

MONO COUNTY.

Miss Fowzer has taken charge of the school at Benton.

NEVADA COUNTY.

Miss M. P. Henderson is teaching the Forest Spa school.

Grass Valley has a Kindergarten, taught by Miss Annie V. Spencer.

PLACER COUNTY.

Miss Tillie Lobner has charge of Miss Jameson's department in the Colfax school, during the latter's illness.

The County Institute will meet at Auburn October 27th, and continue in session three days.

SANTA BARBARA COUNTY.

State Superintendent Campbell and Principal Allen, of the Normal School, held a very interesting and profitable Institute the 15th, 16th, and 17th ult.

SHASTA COUNTY.

The Millville school reopened the 4th inst., in charge of Mr. W. H. Adamson and Miss Emma Gibson, two eminently qualified teachers.

SANTA CLARA COUNTY.

The public school of Gilroy is enjoying a season of unprecedented prosperity under Prof. Oliver, aided by an able corps of assistants.

SOLANO COUNTY.

The Solano County Teachers' Institute began a four days' session Tuesday, September 21st. Its members were welcomed to Benicia in a neat and appropriate speech by L. Weinmann, followed by the superintendent's annual address.

The subject of Penmanship was introduced by O. J. Willis. In the debate which followed, much valuable information was gained from Messrs. Childs and Towle.

Mrs. E. Udell read an excellent essay on drawing.

After presentation of the subject of United States History by J. T. Wallace, the Institute was instructed in a novel and attractive method of interesting pupils in history, devised by Prof. C. N. Childs, of the State Normal School, who exhibited charts made by himself; an important feature being the topical arrangement and engravings of architecture, costumes, implements, etc., illustrative of the civilization of the nations at various periods of their history.

Mr. J. S. Congdon thought that too much geography is taught in most of the schools, and favored the plan pursued by the majority of country school teachers.

Mental arithmetic was skillfully handled by M. Sickal.

The subjects of Bookkeeping by Geo. C. Richards, and Percentage by W. S. Babcock, were replete with practical ideas and valuable suggestions.

Prof. W. C. Price, of San Francisco, dealt with the subject of music in a manner that showed him master of the situation.

In addition to the able treatment of "County Boards," Prof. C. B. Towle rendered the Institute valuable service throughout the session, as did also Prof. Childs and Miss Titus, of the State Normal School.

The lectures by Albert Lyser on "A Few Favorite Authors and Their Books," and that of Geo. W. Minns on "Oliver Wendell Holmes," were thoroughly appreciated by the refined audiences that crowded the hall to its utmost capacity.

Benicia is justly proud of her public schools, which are more prosperous than ever under Prof. Weinmann's management.

The private institutions have always seemed to so overshadow the public schools that the latter have received but little encouragement, but with the present corps of teachers the public schools have received a new impetus, and compare favorably with any of similar grade.

Mr. Sutphen has given up teaching, that he may devote his entire time to his work as superintendent.

The Suisun schools are in a flourishing condition, presided over by Mr. G. C. Richards, assisted by Mrs. Hoyt and Miss Essie Smith. There are 140 pupils in the three departments.

SAN DIEGO COUNTY.

A feature of Superintendent Hitchcock's administration has been his untiring zeal in securing the most desirable talent obtainable for the country schools. The steamer *Orizaba*, on her last trip, carried Miss Minnie Seavey, late of San Joaquin County, for Monument district, and Mr. Eugene Hawley, an ex-University student, for Temecula district.

SISKIYOU COUNTY.

The public schools of Yreka began their fall term the 13th ult., under the able principalship of Mr. Frank H. Darling, late Superintendent of Napa City schools, assisted by Mrs. Haile, Misses Peck and Wheaton.

Mr. John Dooner, late of Stockton, took charge of the Fort Jones school September 13th.

On account of the division of Yreka district, the number of teachers has been diminished from five to four. A matter which finally works a hardship on many of the pupils, especially the older ones.

The next semi-annual examination of

teachers in this county comes off October 12th. Rules in the *Yreka Journal*.

The presidential party, Oregon bound, spent Sunday, the 26th, in Yreka.

The smoke from the burning forests and the extreme cold of the upper air, will prevent any more from ascending the dangerous heights of Mt. Shasta this season; so—no teachers need apply.

SONOMA COUNTY.

Mr. R. D. Faulkner, late of Nevada, is teaching at English Hill.

Mr. W. J. Sargent has closed his school near Sebastopol and gone to Tulare County.

The Sonoma County Teachers' Institute, pursuant to a call by Superintendent C. S. Smyth, assembled at Powell's Theater, Healdsburg, on Monday, September 13th, at 11 A. M., and continued in session five days. Al. Wright, Esq., on behalf of the Board of education and the citizens of Healdsburg, delivered an appropriate address of welcome. The superintendent's address was so full of timely suggestions and good things that a copy was requested for publication. The Institute was divided into three sections for class work. The subjects of grammar, arithmetic, and history were taken up and thoroughly discussed by each section in turn. M. E. C. Munday, principal of the Petaluma Grammar School, conducted the exercises in grammar. Besides being well posted upon the subject, he has so formulated the work that what is usually considered a dry subject is made an interesting and pleasant study. E. T. Crane, the affable secretary of the Institute, and principal of the Santa Rosa West End School, handled the subject of arithmetic to the satisfaction of all the teachers. C. E. Hutton, principal of the Petaluma High School, a thorough gentleman and a ripe scholar, gave the teachers many new ideas about teaching history. C. L. Ennis, principal of the Sonoma Grammar School, gave his ideas upon composition, in a well-written paper. A. G. Burnett, principal of the Healdsburg Grammar School, conducted a class exercise in reading. The gentleman had a difficult work to perform, but did it well, and all doubtless gained many new ideas upon the subject. M. E. C. Munday

discussed drawing, and gave his plan for teaching the same. Prof. C. H. Allen was present Wednesday afternoon and Thursday, and talked upon subjects suggested by teachers. As the professor is thoroughly conversant upon all topics relating to his profession, his talks were very interesting and highly appreciated. The professor gave a lecture Wednesday evening, which was interesting to parents as well as teachers. Dr. Howard Henderson, of San Francisco, lectured Monday evening upon Female Education, and Tuesday evening upon Popular Education. Both lectures were well attended. The doctor made an excellent reputation among the teachers as a lecturer. Thursday evening, Rev. C. C. Stratton, of San José, lectured upon Higher Education. It was a powerful argument in favor of our high schools and universities.

The teachers were all delighted with Healdsburg, its romantic situation and surroundings. There were over one hundred teachers present. The teachers voted to hold the next Institute at Petaluma.

TULARE COUNTY.

Mr. James Malloch, a graduate of the New York Normal School, will take the Stone Corral school the 4th inst.

Superintendent Ellis' commendable efforts to provide first-class teachers for the more remote portions of the county have resulted in obtaining six thoroughly efficient men and women through the Pacific Bureau of Education, during the past two weeks.

TUOLUMNE COUNTY.

The Sonora public school opens the 4th inst., with County Superintendent J. B. Murman, late principal of the Jamestown school, as principal, vice E. T. Petit, resigned; H. Dodge, Mrs. Miller, and Miss Fahay.

Last week Miss Emma Wheelock was united in marriage to Mr. J. B. Shore, a highly esteemed citizen of Jamestown. Mrs. Shore will continue as assistant in the Jamestown school with Principal C. C. Ortego.

School will commence in Columbia district October 4th, with the following corps of teachers: Messrs. A. Stewart, P. Morgan and Miss M. A. Murray.

Miss Ellen Griffin has charge of the Confidence school.

Mrs. Brown, an Eastern lady, is teaching the Don Pedro's Bar school.

The school in Springfield district is reported in a flourishing condition under the supervision of Miss Alice Hill.

Miss Alice Root teaches at Raw Hide, and Miss Ada Van Ardell at Shaw's Flat this term.

The Tuttle town school begun the 20th

ult., under the efficient management of Miss Julia A. Smith, a progressive modern teacher.

YOLO COUNTY.

The Institute meets at Woodland the 13th inst., continuing three days.

Miss Jennie L. Hagan, a teacher of long and successful experience, is assisting Mr. T. J. Goin at Knight's Landing, where she has taught two years.

NEVADA.

HENRY F. BAKER, Editor, Virginia City.

Among the recent appointments of Nevada teachers are the following: Prof. A. B. C. Davis, principal of First Ward Grammar School, Virginia City; W. W. Booher, Sutro; Thomas McDonald, Divide School, Gold Hill; Miss Mattie Holmes, Fort Churchill.

The political campaign has opened, and among the nominations to important school positions may be mentioned J. W. Whitcher, for Superintendent of Schools of Storey county. Mr. Whitcher filled the same position years ago. Frau B. Mercer, of the Sutro *Independent*, has been nominated for the like position in Lyon county; and Rev. J. R. Jevvey, for Washoe county.

Prof. J. N. Flint has been nominated for

the position of School Trustee in Virginia City. This is a tribute to the zeal and interest that Prof. Flint has shown in educational matters in Nevada for the past fifteen years.

Prof. C. S. Young, principal of the Gold Hill schools, has been placed in nomination for the Legislature by the Republicans. It is well that the profession of teaching should be represented in the halls of legislation.

The schools of Reno have taken possession of their new schoolhouse. Nine teachers are employed.

The Storey County Teachers' Association met at the Fourth Ward schoolhouse, Virginia, September 24th.

BOOK NOTICES.

METHODS OF TEACHING. A hand-book of Principles, Directions, and Working Models, for Common-school Teachers. By John Swett. New York: Harper & Bros. San Francisco: A. L. Bancroft & Co.

Even a cursory examination of this book establishes it as the long-sought-for and hitherto-unfound *practical* work on teaching. Our space in this number will not permit the exhaustive review to which it is entitled, so we shall merely call attention to it, and recommend it heartily to the attention of our teachers. The price is 1.50. In our next issue will be found an extended notice.

A TREATISE ON ENGLISH GRAMMAR AND COMPOSITION. By Henry Barnard. San

Francisco: Barnard & Bros. 324 pp. Price \$1.50. For introduction and to teachers, \$1.25.

Amid the deluge of grammars and books on language, it would seem impossible to find anything new, either in method of treatment or manner of presentation. This book, however, has both these merits. It is worthy a careful examination and more than the brief notice which our space this month can afford. We therefore call attention to it now, and promise a critical and extended review in our November issue. We will say here, that teachers will find it a working manual, based on the principle that it is what children do that educates them.

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No. 11

THE ENEMIES OF EDUCATION.

BY E. R. SILL.

MEN are not dangerous now-a-days, for people do not follow leaders, nor bend to authority. The only dangerous enemies of society are false notions. Their name is legion. They go up and down seeking whom they may devour. They cannot stop progress, but they can hinder it. Every time one of them can be met face to face, it can easily be struck down. The difficulty is to make them come squarely out and define themselves, and take the blow.

There are two or three of these notions that are especially vexatious, and even dangerous, because they wear the garb of angels of light. Getting behind the skirt of some unquestioned truth, they make themselves presentable to many well-meaning persons.

One such is the notion that public education is not practical. It is easy to meet it, if you can succeed in pinning it down to any logical discussion. For what does "practical" mean? It is that which serves as successful means to any valuable end. Now the end of public education is the intelligence of men and women. And no one can deny that our schools and colleges do serve to secure this end. For is it not secured in every country and community where public schools and colleges are liberally supported? And is it not deplorably lacking in every country and community where schools and colleges are wanting or but meanly supported? Only induce a man to define his terms carefully, and to leave aside illustrations that are not arguments, and vague, loose, random state-

ments, and there is no difficulty in casting out this notion that our education is not practical. If the schools have everywhere accomplished and are everywhere accomplishing, wherever decently supported, the end of producing public intelligence, and of preventing public ignorance, that nurse of all crime and misery, surely they are doing the most practical piece of work that is going on anywhere. For who are the dangerous classes? Not the poor as such, for there are thousands of poor men who are among our best citizens. Not the foreigners as such, for there are whole communities made up of foreigners in different parts of the United States who are entirely orderly and reputable. It is the ignorant class, whether rich or poor, foreign or native born, that is the dangerous class. Public education is a simple remedy, but it is effectual. It costs trouble, on the part of its friends, and it costs money; but we must have it or cease to be a civilized people.

Nor will the three R's accomplish this end. If the only education, in the community were the bare rudiments of reading, writing, and ciphering, it would not be long before these, too, would be abolished. For who would demand them, and who would teach them? The same tendency which, through ignorance among the masses, is already decrying high schools and colleges, would very soon, as ignorance became denser and denser, abolish even these rudiments. There is no assured safety to our institutions in this country, short of the ground that the son and daughter of every man, rich or poor, citizen or countryman, shall have the free opportunity of as much education as he has the mind and industry to obtain.

It is not enough that a few cities should offer these advantages to their children. The country districts must have them. For, after all, the prosperity and intelligence of any State must in the long run depend on the prosperity and intelligence of its country population. Does the great city suppose she can continue prosperous or intelligent for many generations, if the country is left to ignorance, and to the unthrift, and crime, and poverty that ignorance brings? Is the city an island set away by itself, independent of the fortunes of the rest of the State? Or is it only the heart of a great whole, through which the blood will run rich and warm, or thin and chill, according to the condition of the country regions? It is not as charity that the wealth of one part of the State should help to furnish educational advantages to poorer portions, for we are parts of a whole that must stand or fall together; and mere self-interest and common prudence demand that the whole shall have an intelligent and prosperous people.

Ignorant persons always talk as if education were given as a favor to children. It certainly is not a favor—it is a right, for that matter. But it is given on a still more urgent ground by the State, and that is as a necessity for its own safety and progress. Children will continue to be born and to grow up into men and women. There are no neutrals among them; if educated to high intelligence, they are the allies of civilization; if left in ignorance they are its deadliest foes. And certainly the sort of education that settles that rather important question on the safe side and with perfect certainty, is a practical work. It is simply the most practical and essential undertaking of the State.

Another false notion that we find lurking about in corners, and preying on the cause of public education, is the notion that our schools and colleges are in a bad way morally. This is a peculiarly difficult goblin to come face to face with. It skulks about in obscure places, never uttering itself with any definiteness that can be well met by logic. It is a great haunter of remote and unheard-of newspaper offices; and has been dimly seen hovering about certain ill-ventilated lecture-rooms, and seems to find a specially fruity flavor in any chance mustiness of an exceptional pulpit-cushion. If one ever could catch this notion in any tangible shape, perhaps its quietus could be effected as soon as any way by a few direct questions, as, for example: Is it a fact, on the whole, taking one's own neighborhood into view, that you find the best-educated men and women the most vicious and dangerous to live among? Is it when the teacher or the minister, as types of the best-educated class, visit you, that you lock up your spoons? Do you really think, now, looking at the people in your immediate vicinity, that to make them less intelligent would much improve them as neighbors? Would you, on the whole, much prefer that their children should not go to high school or college, considering them as the people among whom your own sons and daughters will have to live, and perhaps to intermarry? If not, can you frankly, now, by any stretch of imagination, conceive what you mean when you moan about the bad moral influence of the schools and colleges?

It is well that teachers and all good friends of a high education should be aware not only that these and other such notions exist, but that they find lodgment in very respectable and plausible people. They are uttered sometimes with considerable power of speech by an occasional man of good education. And it is quite important to be well aware of the fact, when our foes are of our household.

Not long ago a small body of clergymen convened in one of our cities and discussed the public education of the State. A resolution was offered to the general effect that the State must not go farther than the rudiments of education; and this was supported by the arguments that there was jobbery in the management of school money; that furnishing youth with education is like furnishing them with saddle horses and other favors; that the church is the only safe body to manage education, and the like. A majority of two or three passed the resolution. The newspaper report of the proceedings of this body concludes with the statement, that "they ended by partaking of a splendid collation, with an absolutely perfect *menu*, and a nosegay for each clergyman." And so, rising from their faultless *menu*, and each with his nosegay, they tripped lightly forth to put down the nineteenth century.

One would have supposed that a body of educated men, considering the present needs of California, would, if anything, have strengthened each other in some resolution to see to it that public education here should not become too degraded and low. But, on the contrary, they resolved to warn all persons against public high schools and colleges, and adopted a statement of principle which meant, if it meant anything, as one of their foremost members urged against it, that the only proper and safe repository of all education is the church.

And, nevertheless, we shall continue to have public schools. Moreover, the State will recover, if indeed it has not already recovered, from the temporary blindness that allowed it to discourage its high schools. The voice of the intelligent people of the State is already beginning to be heard, demanding that the country as well as the city shall have modern opportunities and advantages. We may rest assured that the people of our day are not going to see their children grow up to be illiterate, without a protest and a determined effort to prevent it.

EDUCATIONAL GLEANINGS.

[From the Scrap-Book of a Teacher.]

WE learn not only to understand, but also to express what we understand. As much as any one understands, so much he ought to accustom himself to express. Speech and knowledge should proceed with equal steps.—*Comenius*.

SPEECH, as the consummation of the expressive faculties, becomes the inheritance which one generation transmits to another—a possession unconsciously acquired by imitation, although actually the result of long-continued training, and sometimes of painful efforts in detail.—*Russell*.

THE *fancy* is awakened and trained: 1st, by the early training of the senses; 2nd, by not insisting too early upon over-severe exercise of the understanding, and by not stifling it with an empty stuffing of words; 3rd, by the study of poetry, which is peculiarly appropriate to the young.—*Niemeyer*.

A CHILD is never happier than when it is imagining, and thus poetizing itself into strange situations and persons.—*Herder*.

It might not be amiss to make children, as soon as they are capable of it, often to tell a story of anything they know, and to correct at first the most remarkable fault they are guilty of in their way of putting it together. When that fault is cured, then, to show them the next, and so on, till, one after another, all—at least the gross ones—are mended. When they can tell tales pretty well, then it may be time to make them write them. The fables of *Æsop*, the only book almost that I know fit for children, (written in 1693), may afford them matter for this exercise of writing English. When they understand how to write English with due connection, propriety, and order, and are pretty well masters of a tolerable narrative style, they may be advanced to writing of letters, wherein they should not be put upon any strains of wit or compliment, but taught to express their own plain sense.—*Locke*.

“IF I look back,” says *Pestalozzi*, “and ask myself what I have really done toward the improvement of methods of elementary instruction, I find that in recognizing *observation* as the absolute basis of all knowledge, I have established the first and most important principle of instruction.”

HOW TO DRAW THE CONTINENTS.

[From *Barnes' Educational Monthly*, for August.]

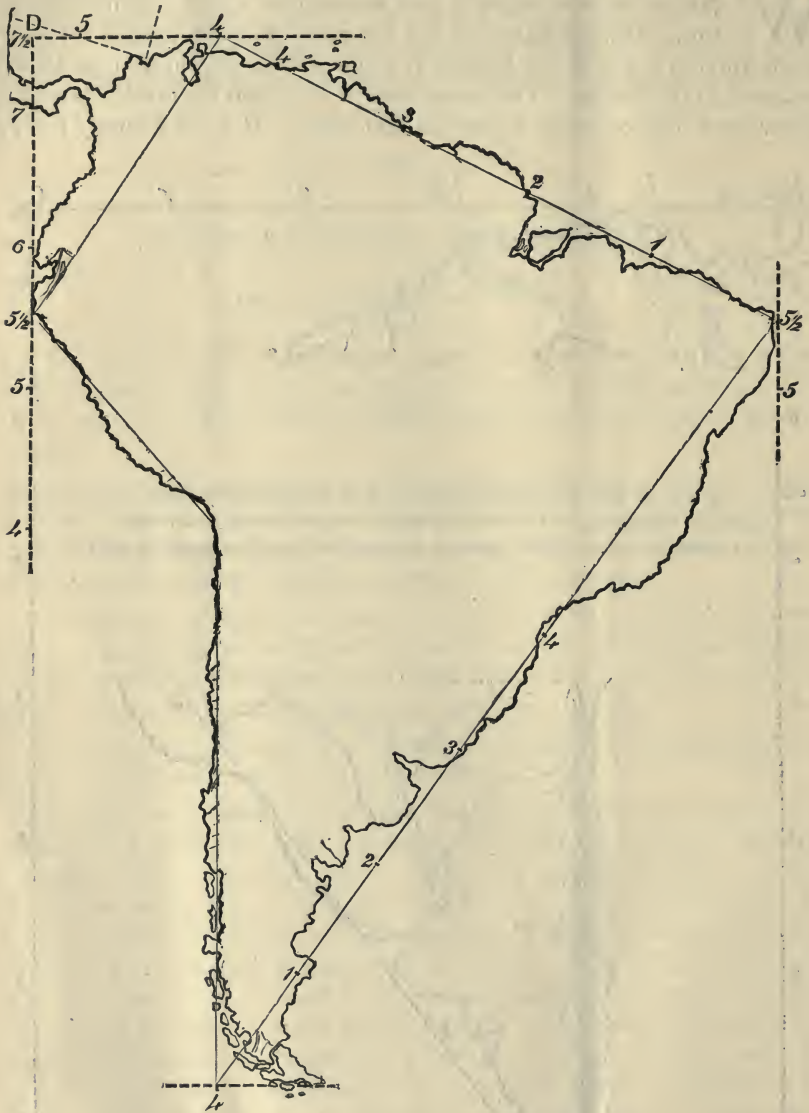
WE present below a simple as well as scientific way of drawing the continents. Any intelligent child of ten years can easily execute the work. South America is first given because it is the easiest drawn; Europe follows because it is the hardest. The dotted lines of this frame are divided into equal spaces, each one of which represents 600 miles. *It is not necessary to draw*



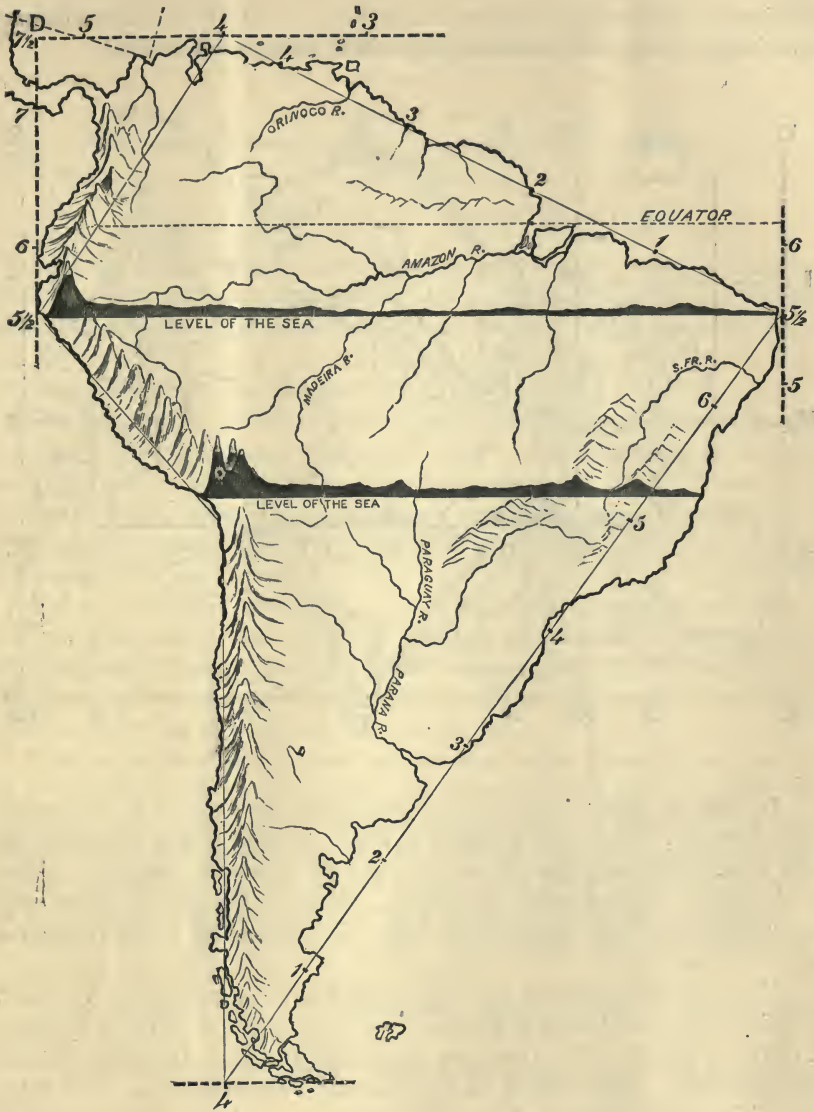
It will be seen that South America is 7 $\frac{1}{2}$ times 600 miles, or 4,500 miles, in length, and 5 $\frac{1}{2}$ times 600 miles, or 3,200 miles, in breadth. This is a valuable lesson, and in this way can be easily and permanently learned.



these lines, but commence at A and with a pasteboard scale, easily made, mark the points 1, 2, etc., to 7 1-2. Next commencing at A, mark the points 1, 2, etc., to 5 1-2: complete the markings of points from B to D, and from C₄ to D. This marks the extreme length and breadth of this continental division.



Next join the points 5 1-2 on the right side with 4 above, and 4 above with 5 1-2 on the left side, and 4 below with 5 1-2 on the right side, and from 4 below draw a line directly north 4 spaces toward 4 above. On all these lines mark the points 1, 2, 3, etc., each representing the distance of 600 miles. Draw the coast lines. It can easily be done.



Valuable lessons have been learned, and the pupil is now prepared to answer many questions, among which will be these: What is the distance along the north-east coast line of South America? What along the south-east? By using the measure, (used in drawing the map) the distance across the continent in any direction can be easily ascertained. This will be a most valuable and interesting exercise.

Now the full map of South America can be completed, with all its political divisions, rivers, cities, mountains, and profile elevations. Nothing like map-

drawing fixes geographical features in the mind, and there is nothing like *accurate* map-drawing to fix accurate geographical features in the mind.



In drawing Europe the same course should be pursued as in drawing South America. The same measure is used. Europe is thus drawn on the same scale, and areas, distances, and sizes can be accurately compared. First, let the outline measurements be marked. Next, let the lines be drawn, with measurement distances marked upon them. Let the outline be drawn, and the map fully completed.

Many valuable questions will suggest themselves to an intelligent teacher. What is the extreme length of Europe from N. E. to S. W.? What is its length E. to W.? From N. to S.? How long are the British Isles? How far is Iceland from Scotland? The length of the Caspian Sea? The Black Sea? The Adriatic? The Mediterranean Sea? The Baltic Sea? How does the size of Europe compare with South America? This last is a most useful question, and can only be learned by actually comparing maps like these drawn on the same scale.

“WHAT is perceived by the senses,” says Niemeyer, “is fixed in the mind more firmly than what is merely said over even a hundred times. It is not the shadows of things, but things themselves, which should be presented to youth.”

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[Santa Barbara County.]

CHAPTER XV.—THE SIGNS AND WITCHES OF WILD-CAT.

CALIFORNIANS for the most part are an irreverent people; ready to laugh in a good-humored sort of way at signs and superstitions, from which they suppose themselves to be unusually free. Yet, if one should remain for a few months in a back-country district like Wild-cat, he could easily collect a not insignificant number of signs which never fail.

The people of Wild-cat had a picnic on the 4th of July. It would hardly be a Fourth without a picnic, to which all could carry their unripe fruit, and season their melted butter with the delicate-tasting red ant, and lie contentedly down by the poison-oak, and amuse themselves by capturing the wandering wood-ticks, and waging unequal warfare upon swarms of bloodthirsty gnats and mosquitoes.

The young people were having a jolly time with firecrackers and other noisy combinations, in a grove near the Wild-cat school-house, while the older people had seated themselves in the school-house to listen to a few words which John Dean had to say about the change of text-books, which would take place when the school was reopened on the 12th of July.

The Santos Board of Education had made an entire change of text-books, and, by persistent effort, John Dean had caused the adoption of nearly all those books which were recommended at the last Teachers' Institute. He now explained to the parents how they were to make the required changes with the least expense and trouble; and he said if they would bring all the old books to him the next week, he would take all the trouble of making the exchange.

"Better not bring them next Sunday," suggested Dr. Peters. "You know it is unlucky to make a bargain upon a Sunday."

"That is one of your pet superstitions, doctor. Friday is the unlucky day, if there is any," said the judge.

"We all have our pet signs," replied the doctor, "and this is one of mine."

"I'm sure I don't believe in any of your signs," said sister Johnson, somewhat tartly. "Thank Heaven, I am free from all such nonsense as that."

"What makes you always say 'God bless you,' when a friend sneezes?" inquired the doctor.

"What is my superstition?" inquired Mrs. White, trying to give sister Johnson time to recover from her defeat.

"What is the reason you always look under the bed before you blow out the light? Have you ever found a burglar there? And what would you take to go from here to your house after dark, alone?"

"Oh! all the women are superstitious," said Henry Brown. "If my wife spills salt she throws a pinch into the fire or over her shoulder. She wont touch clams or oysters in a month that has no "r" in it. If a looking-glass breaks—"

"That will do, Mr. Brown. You should know better than to tell all the world of such things about your wife," cried Mrs. Brown.

"Now here is Barney McCord," continued the doctor. "He is as full of signs as an egg is of meat. He can tell you more wonderful things about the moon than all the astronomers in the country. Barney's moon controls the wind and the weather, the rain and the vegetation, flesh and fish, fences and shingled roofs, the brains and the eyes, the stones on the ground and the sap in the trees, the banshees and the—"

"Hold on a bit, now, doctor," interrupted Barney, good-naturedly. "Sure, the moon can tell ye as much about the water that is above the ground, as that bit of a peach-stick ye like so well, can tell about the water that is under the ground."

All laughed at this palpable hit, for the doctor was noted far and near as a water-witch, and people about to dig wells would comê for several miles around, to get the doctor to locate the place for the well with his forked peach-stick.

John Dean had heard a great deal said about the doctor's success as a water-witch, and was anxious to see him experiment near the school-house, as he wished to dig a well there the next week. So he got a forked peach-branch for the doctor, and started him in his search for water. Holding an end of the twig in each hand, with the thumbs pointing out and downward and the butt end of the branch upward, the doctor walked slowly around the school-house, but the stick never moved. As he turned and walked a little way up the hill the stick began to turn, and at last pointed straight down. As the doctor moved along, the stick gradually became upright again. Retracing his steps, from where the stick first began to turn, until it pointed straight down, the doctor declared that it was about ten feet to an abundant supply of water. "The distance to the water," said he, "is always equal to the distance from the first turning of the stick to the place where the vein is." The doctor declared the feeling, when the stick began to turn, to be precisely like that given by an electrical battery.

He then followed the vein for some distance along the hill and down into the valley, noting several points where the influence seemed to be stronger than at others. John followed in his track, and carefully marked the places he pointed out, and also several places where the doctor declared that water could not be found at a reasonable depth. Several of the younger folks were now watching the proceedings with greater doubt as to the real value of the doctor's witchery than many of the elders seemed to have.

"Now, doctor, you will let me see if you can find these same places again," said John, taking out his pocket-handkerchief, "and I want to blindfold you this time. You say that you do not consciously move that stick, and I believe you; but I want to show the younger ones especially, how they should test a thing of this kind before they believe it.

So John securely blindfolded the doctor's eyes, and sent him out again on his search for water, after turning him around several times and leading him to a point on the hill to which he had been before.

But, alas, for the success of the water-witch! The stick either obstinately refused to turn, or made such erratic movements, that it was plain to be seen that the charm was broken.

"The presence of an unbeliever of strong will," said Elder Meeks, who had, of late, strong leanings toward the spiritualists' doctrines, "prevents the magnetism of the doctor from acting in its normal way." And, having explained the failure to his own satisfaction, the elder led the way back to the house. There they found Mrs. Bennet scolding Joe for having picked up a toad.

"Your hands will be just covered with warts, if you handle that nasty toad," said Mrs. Bennet. "Sure, his hands were a sight to be seen a month ago; but my sister, she rubbed every wart with a split bean and threw it into the fire, and now there is hardly one to be seen on his hands."

Several others gave the various ways they had heard from their mothers and grandmothers to drive away warts, "though they don't seem to have any effect on corns," said one, innocently.

"Always pare your toe-nails on a Sunday morning, before you get out of bed," suggested John, mischievously. "I have heard that is a sure remedy."

"I declare, I'll try it next Sunday," said the lady, who, from a foolish desire to have her feet appear a size smaller than nature formed them, had suffered greatly from corns.

"If it was a sty, now, I could tell you how to cure it in a minute," said Mrs. Peters. "You wait to see which eye-winker is in the middle of the sty, and you pull that out and throw it into the fire, and the sty will go away in a day or two."

John suggested that by the time the sty got big enough to tell which winker was in the center, it would generally go away in a few days of itself.

"What do you know about children and their ailments?" said Mrs. Peters, good-humoredly. "Wait until you have raised half a dozen of your own, and then you can talk to us old women."

"A school-teacher learns more about children in one year, than many a mother does all her life," retorted John. "We have them at all ages, from four years up; spoiled, petted, abused, saucy, timid, bright, dull, and every other kind. What can a woman, with one-fifth the number of children I take care of, and those all of one pattern, know about managing children."

"But they are not your own, young man," said an old lady. "It's easy enough to manage other folk's children for a few hours of the day, but a wee bit one of your own will give you more care, and trouble, and worry, than a score of other ones."

"I thought it was children who brought good luck to the house, grandmother?—so your countrymen say," replied John.

"So they do, sometimes. Some are born lucky and some unlucky. Here is a little one with an unlucky mark," drawing Dick Brown near, and showing

a mole on the back of his neck. "And he was born on a Friday, too. It's only praying to the Blessed Virgin will save him from the rope."

"By the time Dick gets grown up, people will know better than to hang their fellow-men. And Dick is too good a boy for that, grandmother. That sign is n't of any worth in this country."

"Here, grandma, I have just made you a nice cup of tea, and you must tell us what you see in it before you drink it," said Alpha, coming up to the old lady. "Find something nice for me in there."

The old woman took the cup of tea, and after looking earnestly in the cup for a few moments, began:

"I see a house and a man—a tall, good-looking man—and the man is trying to get a girl to go with him. But she shakes her head and starts off, hoping the man will follow her. He turns around and goes the other way, and then she turns, too, and—there! They have come together, and they go hand in hand toward the house, and that means a marriage."

"That girl can't be me," said Alpha, shaking her head. "I would n't run back that way after any man living."

"When you get a man you'll be running this way and that from morning till night to wait on him," said the wise old lady. "God made women that way, and if they try to change it, trouble and trials will come."

"I never could see a tenth part of what grandma sees in a cup of tea," said Mrs. Bennet. "I've seen a letter there sometimes, when it has come true."

"I can see more in this lady-bug than in a cup of tea," said Alpha, picking up one in her hand and letting it crawl toward the end of her finger, while she sang:

"Lady-bug! lady-bug!
Fly away home,
Your house is on fire,
And your children will burn."

"How can you bear to handle those nasty bugs?" cried Mrs. Brown. "And there is a horned toad in your pocket. How can you touch such things?"

"Is n't he a beauty?" said Alpha, composedly taking it out of her pocket. "See! How he likes to be rubbed on his back and under his jaws! Nasty and nice are matters of fancy. Everything is nice in its proper place; and put the nicest things in the wrong place and they are no longer nice. This little fellow is especially nice, because he is differently marked from ordinary, and I expect to get a dollar for him."

"I believe you would even handle a snake, and call it nice," exclaimed Ellen Meeks.

"Why not? There are very few harmful snakes in this country besides the rattlesnakes, and it is an unreasoning and unreasonable prejudice that causes us to kill a snake because it is a snake."

"We don't have such snakes here as we have in the East," said the judge. "There was the glass-snake, for instance. You hit that, and it would fly to

pieces, and after a little while the pieces would slowly move and come together again, and the snake would crawl off as good as ever."

"Papa told me about those. He said they were not snakes, but a relation of our long-tailed lizards here; and the vertebræ of their tails would separate when struck; but the tail would never grow fast again, though a new one might grow on after awhile."

"Then there was the hoop-snake," continued the judge, apparently not heeding what Alpha said. "It would seize its tail in its mouth and roll over and over faster than a boy could roll his hoop."

"Yes, I have heard about that," said Alpha, scornfully, "and how, if it struck a tree in its course, the tree would die with the poison from the dart on the end of its tail. Those are just snake stories. They tell about snakes springing on their prey, when they can't jump at all. A rattlesnake can only throw itself out about half its length. Then, stories about snakes charming birds and squirrels—they are all lies. I have watched this so-called 'charming' many a time. Some birds, like some people, seem to lose their sober senses on the approach of extreme danger. They become stupefied with fear. In one case I found that a bird, that was fluttering in a strange way near a rattlesnake, which was watching it, had already been bitten by the snake, and was in its death agony. It had probably not seen the snake before it was struck."

The judge shook his head.

"I would n't stand still and look straight into a snake's eyes, if I were alone, for one hundred dollars," said he in a solemn voice.

"I have looked into their eyes many a time," returned Alpha, "and I notice they nearly always crawl away as soon as they see I am looking at them."

"Is n't it curious that a snake and an owl and a squirrel will live so contentedly together in the same hole?" said Mrs. White.

"Yes; and they all take such good care of the little squirrels. They kill them with kindness," said Alpha, mockingly, as she turned and went back toward the grove.

"A queer girl," said Mrs. White. "She has changed wonderfully the past year. I used to think her somewhat homely, but she is growing remarkably handsome of late; and when she is singing you are so charmed that you never think whether she is beautiful or not."

"But it aint a good sign to see a young girl like her live alone, by herself, just like an old woman," said the judge. "I've reasoned with her, but she only laughs at my words, and says she will marry some tramp and give him a home when she is tired of her freedom."

"It's all on account of that heathenish Greek name her father gave her," said the judge's wife. "You needn't tell me that luck do n't go with names. I knew one man—a terrible scoffing infidel—who named his first child Judas; and it was n't two weeks after, that child was dead with the colic. He called his next child Jesus, and, if you believe it, the child is deaf and dumb to this day."

"Why, I know lots of Spanish boys named Jesus, only they call it *Kos-suce*," said Mr. White, "and they are not deaf and dumb, either."

"It may do for Spanish children, but it is an unlucky name for a white child," persisted Mrs. Johnson.

"How is it that Alpha seems to know so much about plants and animals?" said John, in a low tone, speaking to Thomas Johnson, who was standing near him. "I have been greatly surprised several times to find out how much she knew about our native birds and plants. She seems to know their scientific names as well as their common names, though I am told that her father was not a student of natural history."

"Why, don't you know," said Thomas, looking up somewhat queerly, "she makes her living by gathering such things? Three or four years ago one of those naturalists came to visit her father, and he and Alpha used to gather all the different kinds of plants and seeds and bugs they could find. He taught her the names, and when he went away she used to gather other specimens for him, and he sent her money to pay for them. For the past two years she has been collecting for a house in Western New York; and she has sent lots of shells and animals, by mail and other ways. She makes lots of money that way."

"I wondered how she managed to support herself," said John—"that explains it. She always seems to have plenty of money, and insisted on paying me for music lessons, though I did not want to take anything."

"She supported her father the last year he lived, paid all his doctor bills, and kept a woman to wait on him while she was gone hunting up specimens. The folks about here thought hard of her leaving her father for some one else to take care of; and I was the only one who knew why she did it, for she would never let me tell."

"She is a strange girl. I talked to her quite seriously one time last winter, but it seemed to make no impression on her; and when she went home I heard her whistling on the way as gaily as if nothing had gone wrong."

"And when she got home she threw herself on the bed and cried like a baby," said Thomas, to himself. "I remember that time well."

"What do you think of phrenology?" inquired Dr. Peters of John, who came up to the school-house as a number of the men were talking about a traveling phrenologist who was "doing the neighborhood."

"Humbug, supported by a shadow of truth," answered John, promptly. "These traveling phrenologists do read character tolerably well. It is their business. But they are guided a great deal by the face and dress of the man. In a general way their judgments are likely to be correct, but on particulars they often fail lamentably."

"I have noticed," said Mr. White, "that these phrenologists nearly always give a flattering description of the character of those whose heads they examine. They tell them they are fond of good eating, which is true of nearly all men; that they are strong-willed and naturally very intelligent, which all would like to think of themselves; and say that they are fond of company, especially of ladies' society, which also is true of nearly all men. But some men can tell men's peculiar traits with a great deal of accuracy."

"Let me give you a little personal experience," said John, quietly. "My head was examined twice by O. S. Fowler, who is supposed to be one of the greatest apostles of phrenology. The first time he told me to stick to the plow; that I would never succeed in any literary pursuit; that I was so fond of the women, I should probably be married before I was of age; that I had no taste for music or painting, and but little taste for any study, except mathematics. Five years later, he told me I was especially gifted as a lawyer; that I had a great command of language, but no taste for mathematics; that I could hardly tell one tune from another; that I could become a good painter; that I was very fond of fine clothes, fine horses, and fine women; that I could never save a dollar, and would always be cheated in making a bargain—in fact he gave me as opposite a character in most things to five years before as you could imagine, and neither time did he come anywhere near the truth. I remember at the same time we fixed up a man, who had a remarkable gift for mathematics, and who was just as remarkable for losing his way and having accidents by upsetting his wagon. We fixed this man up as a stage-driver, and Mr. Fowler gave him a character corresponding with his clothes; said he could hardly tell what 8×7 was, but he could drive a six-horse team anywhere he had ever been, equal to any one in the land."

"People love to be humbugged," said the judge.

"Not so. I think people dislike to be humbugged," replied John, "but the way they are trained makes them an easy prey to any rascal who wishes to impose upon them."

"Then schools and school-teachers are to blame for that. You are catching yourself in a trap, Mr. Dean."

"The people are to blame for the quality of their schools. From earliest childhood the little ones are taught to believe by faith. They receive the book-knowledge they get by faith in the teacher and in the book. It is so because mother, or father, or teacher tells you so. The preacher tells them to have faith, and they join the church. Thus they move through life, helpless cripples, dependent on the say-so of others, swallowing with childlike credulity the impostures of the day, investing in blue glass, enriching the makers of patent medicines, sending the earnings their families need to help (?) the poor heathen, crushing down the doubts that arise in themselves and in their children; until it is a wonder to me how the world can progress in spite of these people."

"My young friend, we could not get along in this world without 'Faith, Hope, and Charity,' and the greatest of all these is 'charity,'" said the elder, who felt he had great need of charity for this reckless young iconoclast.

"I don't like those three so well as others I could name," replied John. "Instead of faith, give me the knowledge born of trial; instead of hope, the certainty born of knowledge; and for charity, the justice of unvarying, eternal law. Charity or love is born of passion, and dies with passion; but justice, founded upon the truth, brings that lasting regard which the grave cannot destroy."

"Then, you would have all our children doubting Thomases," said Mrs. White, good-humoredly.

"Of doubt is born experiment, and experiment leads to inventions. Teach the child in the school-room what he needs in after-life—the self-reliance that springs from unaided work; that decision and judgment which comes from comparison and reasoning; that economy which results in a weighing of benefits. Teach him these, and he will not waste his life in fighting the laws of nature, nor lose his cheerfulness over complaints of the inevitable. He will not be swayed by party passion, and biased by unreasoning prejudice, but will prove all things, and hold fast to that which is good."

"I am much afraid," said Elder Meeks to the doctor, as they walked home from the picnic, "that young man will do as much damage to our children's souls by his open unbelief, as he does good to their minds by training their intellect."

"If my children are as smart and well-behaved when they grow up as their teacher, I shan't grieve if they don't want to wear out the knees of their breeches," was the blunt reply.

"This is an age of doubt," sighed the elder, as he went his way home. "The sheep are being scattered, and they listen not to the voice of the shepherd. They stray aside and are lost; and the shepherd hath not their wool to cover his back." And the elder felt sorely grieved.

THE C. L. S. C.

This department is under the editorial charge of Miss L. M. WASHBURN, San Jose, to whom all communications relating thereto must be addressed.

CHAUTAUQUA.

WHAT is Chautauqua, whose name meets us now at every turn, yet still trips our eye with its spelling, and our tongue with its pronunciation?

Chautauqua is the Indian name of a lovely sheet of water high among the hills of western New York. The writer remembers well the retirement in which its quiet beauty lay ten years ago. A little steamer's daily trips alone ruffled its surface, connecting the village at the head of the lake with the thriving little city at its foot, twenty-five miles away, and landing an occasional picnic party at one or another of the wooded points. Now, during the summer, twenty steamers puff slowly along under their loads of passengers gathered from all parts of the Union. Encampments and hotels appear along the shores, but the living mass tends toward one central point. At night, electric lights and Chinese lanterns gleam through the trees; by sober daylight, the grove gives glimpses of a city half wood, half canvas. A fashionable watering-place? But

these people thronging the streets or lounging by the lake-side have books under their arms. A camp-meeting? That is not a hymn which resounds in full chorus from yonder large tent. Evidently this summer city has ways of its own. Now a bell rings, and the crowd disappears with a suddenness which prompts you to follow and investigate. From the open windows of the first building comes a very babel of languages: French or German saluting your ear at one moment, Greek or Hebrew at the next. Here is an audience of children breaking into merry laughter over the quick blackboard sketches of a noted caricaturist; the next blackboard figures are astronomical diagrams, and the pupils earnest men and women. You peep into a tent, and see twenty eager students bending over as many microscopes. Here are the children again in the unmistakable happy order of the kindergarten; and across the way other happy children equally absorbed in clay molding, under an artist teacher. Fifty ladies and gentlemen are writing examination papers: a sight that tempts no lingering. We rather turn toward a museum, presided over by an expositor, with Yankee face and oriental dress. But with these short stops we have been steadily making our way in the direction taken by the main throng, and find ourselves at last in a great amphitheater. The sides of a natural ravine have been roofed and seated. Four thousand faces turn toward the platform, lighting in smiles or firing with earnestness under the words of a magnetic speaker, who sways them at his will. This is Chautauqua; and that is Dr. Vincent, its originator, its leader, its animating spirit.

The recent centennial celebration of the founding of the modern Sunday-school system by Robert Raikes has called attention to the wonderful progress of this movement, and its probably still greater future. Superficial readers are apt to notice mainly statistics as to the millions of pupils and teachers. More thoughtful observers dwell on the wonderful advance in real study of the Bible and all connected subjects, as indicated by the immensely increased sale of books bearing on biblical research, and the development of an entirely new periodical literature, critical and explanatory. I do not here refer to the millions of "lesson leaves" issued for the pupils in Sunday-schools, but to the six or seven hundred thousand expositions of the weekly Bible lessons prepared for the use of teachers by some of the leading scholars and divines of America. The greatest impetus to this remarkable advance has been given within the last decade, by the inauguration of the International Lesson System, centering the study of two continents, week after week, on a systematic course of lessons extending over the whole Bible in seven years. Of this system the Rev. J. H. Vincent, D. D., has been one of the leading advocates. The vast army of earnest Sunday-school teachers began to feel still more deeply their responsibility to improve the quality of their teaching, and to organize institutes, conventions, and normal classes for this purpose. The National Sunday-school Assembly, with its growing numbers and interest, needed a convenient place for meeting. Chautauqua Lake was selected by Dr. Vincent and Mr. Lewis Miller, a pretty wooded point purchased, and the first Chautauqua Assembly held in 1874.

From the first the Chautauqua Assembly has been a normal school. Its platform lectures have not been mere declamations, but earnest, practical discussions of the two great topics: how to teach, and what to teach. Experienced teachers hold model classes. Training in questioning and in the preparation of lessons are leading features. A Chautauqua course of normal lessons, divided between the consideration of the Bible and its contents, and the theory and practice of teaching, was prepared by a committee from ten church denominations, and has formed a basis for study in many cities of the Union, thus continuing through the year the work of the summer assembly. Written examinations are held each year, and the successful competitors now form a large band of "Chautauqua Alumni." Meanwhile, special features have been added from year to year. Geographical and historical object-teaching on a large scale is carried on by models and collections. Among these is the Park of Palestine, a relief map on the shore of the lake, which answers to the Mediterranean, affording in an afternoon more vivid conceptions of the physical features of Palestine than a large amount of reading; an equally fine model of Jerusalem; a sectional model of the Great Pyramid; a complete oriental house, used as a museum. All these are presided over and explained by returned residents of Syria, whose oriental dress lends a sort of naturalness to the whole. Lecturers of note occupy the platform, and the ever-broadening programme gives variety enough for all tastes. Philosophy, theology, history, literature, science, language, individual lectures, and lectures in courses: these attract the large audiences, while the class sections pursue their specialties. There has even been a cooking-school, held by an accomplished lady from ——— Boston, devoted to baked beans as well as culture. Societies began to appoint meetings at this convenient center, and other conventions to cluster about the great assembly. The National Educational Association leads the way each summer, with its normal, elementary, and higher education departments, and its Spelling Reform Association, under Prof. Marsh and Prof. Whitney. Then the school of languages, ancient and modern, comes on the ground for a six weeks' session. A missionary institute is not the least interesting. A secular Teachers' Retreat opens its doors for comparison of methods. During the assembly proper, days are set apart for special features. This year, perhaps, the most thrilling was the anniversary of the Christian Commission, presided over by that grand leader, Geo. H. Stuart, whose name became so familiar during the war. Then there was the Woman's National Temperance Union, gracefully led by the accomplished Miss Willard. Yes, and among these educational and philanthropic conventions my eye catches the Phi Kappa Psi Reunion, with an address by Robert Burdette of the Hawkeye, as the feature of the programme. For Chautauqua knows how to laugh. Dr. Vincent himself is sunshine; and there is always Frank Beard, with his caricatures and never-ending fun, irradiating even a drizzling rainy day. Music, camp-fires, boating and fishing on the lake: these, I was about to say, are the diversions; but the people will persist in thinking the lectures and classes the best recreation of all.

To accommodate these varied interests, and the ever-increasing thousands in attendance, building has followed building—the Pavilion, the Children's

Temple, the Hall of Philosophy, and now the great Amphitheater. A daily newspaper is published on the grounds—steam printing-press, reporters, and all. Post-office, telegraph, and telephone lend their aid. At every turn some fresh convenience or some new form of work meets your eye; and amid all moves Dr. Vincent, organizing, directing, brightening, watching with a special enthusiasm over his own chosen normal Sunday-school work, but by his happy tact adding to the charm of every phase of work—a veritable prince, ruling a happy kingdom. To the exclamation, now not seldom heard, "But this Chautauqua of yours is a summer university!" he replies: "A school—not a university. A school for those who, conscious of their need, earnestly desire the highest culture possible for them. It seeks to give general views of the realm of knowledge, to promote mental discipline, to incite to healthful rivalry, to bring the multitude in contact with some of the most gifted, vigorous, and brilliant intellects on the continent, and to open the way of knowledge so that the masses in shop, counting-room, store, kitchen, and parlor may walk on a higher plane and live with a nobler aim."

The Chautauqua Literary and Scientific Circle is the latest and one of the most striking developments of the Chautauqua idea. It aims, in Dr. Vincent's own words, to extend its influence beyond the few weeks spent at Chautauqua, and utilizes home life in the interest of culture. Just as Chautauqua is not a university, but a school for the people, so the C. L. S. C. takes the place of no other course of study, but simply endeavors to give to busy people as much culture as they can gain by persistently using their fragments of time. Dr. Vincent says to them: "Men may think while they work. Every-day life may be ennobled by the habit of thinking on the right subjects with the right aim and in the right way. All that is needed is faithful effort and a little guidance; and, though we lack class-room rivalry to urge us on, we may have by association the stimulus of mutual sympathy."

Who would have dreamed that such numbers would flock to the call, showing how real had been the want thus met? The seven hundred members who came eagerly forward to form the new society that August day, in 1878, when Dr. Vincent first laid its plan before the Chautauqua Assembly, swelled to as many thousands before three months were over; and now the third year starts with a membership of twenty thousand.

The core of the society consists of the attendants at the Chautauqua Assembly. There the reunions are held; the study of the year is supplemented and stimulated by the whole varied programme of the assembly. But thousands who cannot be present at the great summer school can go on with the studies of the course, receiving through books and papers a sort of reflex wave of the general enthusiasm. It is sometimes asked if the C. L. S. C. is not a Sunday-school organization. If I have faithfully portrayed the spirit of Chautauqua, you will see it is that of large-minded Christian earnestness. Its basis principle is, that they who honor God should be of all men most interested to learn of his works, in nature and history, and most earnest to attain that symmetrical development of intellect and heart which we call culture. But Chautauqua draws no lines of creed. It welcomes all earnest students, of whatever

belief, to these advantages for culture which Christian effort has put within their reach. The C. L. S. C. course of reading is tentative; changes are made from year to year as they are found desirable. Criticisms may easily be made as to this or that feature; but on the whole it has proved wonderfully adapted to its purpose. And it has in its leader the same fertile brain, indomitable will, and earnest heart, that have made Chautauqua not only successful, but progressive.

PROFESSIONAL KNOWLEDGE.

A LAWYER learns how to read, write, parse, etc., and then studies Blackstone, Chitty, Kent, etc. A physician learns to read, write, parse, and then studies Flint, Draper, Hamilton, etc. A teacher learns how to read, write, parse, etc., and then—he stops studying. This is the case with nine hundred and ninety-nine out of one thousand—the *other* one goes on to read and give himself a broader culture. But he does little to gain professional knowledge.

The teacher should have a clear view of the History of Education.

He should know the great teachers of the past by name and somewhat by doctrine. He should have a definite knowledge of the order of the development of the mental powers. He should know the effect on each mental power of each study—for example, how does the study of grammar educate, and in what way does it differ from arithmetic?

He should know the great leading principles of education.

He should know the methods employed in teaching by the masters of his art.

He should understand the principles of school management.

He should know the means of cultivating the moral faculties.

This is but a summary of the professional knowledge required of any teacher who enters the school-room.

It may seem that it is requiring very much of the teacher, but the place demands it, if public sentiment does not—the *pupil needs such teachers*.

The formation of an educational library should be one of the first duties of the teacher. Then, fixing his mind day by day on educational facts and principles, he will gain a professional way of looking at things, and he will accumulate knowledge in a well-defined track; in the course of years it will make him a strong teacher.—*N. Y. School Journal*.

“I CONCEIVE it would be one of the greatest boons that could be conferred upon England, if henceforth every child in the country were instructed in the general knowledge of the things about it—in the elements of physics and botany. But I should be still better pleased, if there could be added somewhat of chemistry, and an elementary acquaintance with human physiology.”—*Huxley*.

EDITORIAL DEPARTMENT.

BUSINESS MATTERS.

ANNOUNCEMENTS and the prospectus for 1881 will be issued as usual with our December number. The publishers are not yet fully satisfied with the JOURNAL, and will make every effort during the coming year so to improve its literary and educational standard, as will make it among the best of its class on the continent. As may be seen on another page, the examination of and awards on the premium essays will be made so that publication will begin with our fifth volume.

We find on examination of our books, that we are indebted to some of the districts of the State who subscribed and paid for the JOURNAL for the current year, and who have received from three to nine numbers on account of said subscription. By action of the State Board the JOURNAL is now sent to all these districts, and paid for by a warrant on the County Treasury. As we do not wish double pay, we will either refund the money due, or send any book on the library list, to the amount of the subscription overpaid. Let trustees notify us promptly which they desire.

Our business manager has sent out a large number of bills, to which we await the proper response. We desire to balance up our books with the close of the year, and trust all subscriptions due us will be promptly paid up.

From letters which have reached us, notably from Alameda County, we learn that some mistakes have been made in sending bills to persons who have already paid for the current year. Such errors are of course unintentional, and the publishers expect to be notified promptly where they have been made.

After the first of January the policy of continuing the JOURNAL after the term of subscription expires, will be abandoned. We trust that teachers will renew promptly, and thus avoid the trouble and delay incident to a recopying of names and the making of new lists.

From our December issue, it will be seen that effective measures are being taken to make our publication worthy the continued and hearty support of every conscientious teacher.

TARDY JUSTICE.

“BETTER late than never” is an old adage cheerfully accepted by modern philosophy. So San Francisco primary-school teachers will hail with no less delight, because so long deferred, the tardy justice which the Board will soon do them. It is reported, with every appearance of authenticity, that in December the salary list is to be revised, and the salaries of primary teachers raised to their old figures.

This action, it is feared, is to be taken rather in obedience to an overpowering public sentiment, than to a rational appreciation of the value and importance of the work done in our primary schools. No superstructure can be stable whose foundation is laid of improper materials in shifting sands. This is now too much the case with our common schools in the far West.

We have, theoretically at least, an efficient and thorough system of superintendence. Our State University, the crown of the system, is munificently endowed, has a fine corps of professors, all the modern appurtenances, with elective courses of study. Our high schools, though not sufficiently numerous, are, where established at all, well sustained and well taught. As far as the organization of our grammar schools is concerned, there is little ground for adverse criticism, except here and there, in the retention of some old pedagogue of a generation before the last, who has long outlived his usefulness.

In our primary schools, alone, every principle of educational science, every axiom of political economy, every rule of common sense, is violated. It is a correct rule that "the teacher should be raised to the salary; the salary not lowered to the teacher." Our primary grades, especially the lowest, require the most experienced, wisest, truest teachers. Now and then a young, inexperienced woman is found, born with the genius for teaching, who can go into a class of the Eighth Grade and do it justice. But this is the exception; the rule is the reverse.

When the San Francisco Board of Education revise the salary schedule, let them, if they have the permanent good of the schools at heart—if this contemplated advance is more than a weakening under pressure, a concession to the just resentment of an intelligent people—let them place their most competent teachers in the lowest primary classes, and grade their salaries in accordance; making the lowest class of the whole school organization the highest in point of salary.

THE PREMIUM ESSAYS.

THUS far about a dozen essays have been submitted for competition, on the subjects designated in our August issue. The time during which essays may be sent in would expire on the 15th of November, but we deem it advisable, as inquiries are still being made as to the conditions of competition, to extend that time one month, or until December 15th. The essays will then be examined by the committee, and the awards announced in the January JOURNAL.

ACKNOWLEDGMENT.

WE are indebted to the courtesy of the eminent New York publishers, Messrs. A. S. Barnes & Co., for plates of the maps in the article, "How to Draw the Continent," in this issue of the JOURNAL. The article will show just what is required, and as much as teachers need do in the direction of map-drawing. With the drawing of the map of California and of the United States, the training of pupils in this special direction may well stop.

CREDIT WHERE DUE.

AN oversight on the part of compositor and proof-reader made us omit credit last month for the interesting article by Dr. Warring on "The Solar System and its Neighbors." We are indebted for the article to the pages of *The Popular*

Science Monthly; and it gives us pleasure to take advantage of the opportunity afforded by this correction again to call the attention of American teachers to this unsurpassed scientific periodical. We know of no better means of keeping pace with the development of modern civilization, of self-culture, than by a careful perusal of the successive numbers of *The Popular Science Monthly*.

THE NEXT MEETING OF THE STATE TEACHERS' ASSOCIATION.

A MEETING of the Executive Committee of the State Teachers' Association was held at the Palace Hotel, San Francisco, Saturday evening, October 23rd; President Norton in the chair. An informal discussion took place as to the kind of sessions to hold, whether or not to have section meetings, etc. No conclusions were reached, though the general opinion inclined in favor of meetings of the whole association for lectures, essays, and general discussions. The names of Prof. George Davidson of the Coast Survey, Prof. E. R. Sill of the University, and others, were suggested for lecturers, and it was ordered to extend them invitations. The committee then adjourned to meet on the Saturday following Thanksgiving Day, when a programme will be prepared and all arrangements made.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

LIBRARY FUND.

Trustees have no right to use the Library Fund, or any part of it, in the purchase of text-books for use in the school. These should be supplied by the pupils themselves. Should any district or city desire to adopt the system of Free Text-books, (a most excellent system) the money necessary must be provided by the district or city.

GRAMMAR SCHOOL DIPLOMAS.

EXTRACT FROM A LETTER.—“I have seen the ‘Diplomas of Graduation’ forwarded by you, and it seems to me there is a mistake in the form. The law provides that said diplomas are to be issued by the Board of Education, yet those sent are to be signed by the *President of the Board of Trustees*, School Superintendent, and the principal of the school. If they are to be issued by the Board of Education, they should be signed by the members of said Board, or at least by the President and Secretary. I am anxious to hear from you, as we have eight diplomas to issue at our first meeting.”

EXTRACT FROM THE ANSWER.—“And now in regard to the diplomas. It is true they are to be issued by the Board of Education, but, for the present at least, the Board can only act upon information and recommendation of the district. The diploma being filled out with the name of the graduate, and signed by the principal of the school and the President of the Board of Trustees of the district, and forwarded to the Board of Education, is the recommendation; and, when acted upon favorably by the Board and signed by the secretary, who is Superintendent of Schools of the county, is ready for delivery. I believe that the form of the diploma will, upon second thought, commend itself to you, as well adapted to meet all the requirements with the least possible confusion, red-tape, or delay.”

CORPORAL PUNISHMENT.

EXTRACT FROM A LETTER.—“Some days ago I was compelled to punish a pupil for willful and continued disobedience. The pupil had given all my predecessors trouble. I was arrested and tried for assault, by the mother of the child. The jury, failing to agree, signed a petition to the justice, asking for a dismissal of the case, which was done.

“Those who were for conviction held that whipping, as a mode of punishment is not laid down in the school law; that no teacher in the State has a right to punish with a whip, according to its provisions. This case has excited deep interest throughout the county. All the trustees and the citizens generally have stood by me in the difficulty. I have been asked by the Board of Trustees and the leading citizens to ask you the following questions:

“1st. Is whipping a legal mode of punishment in schools?

“2nd. Is suspension or expulsion the only mode of punishment authorized by the school law?

“By answering the above at your earliest convenience you will not only oblige me, but the community in general.”

EXTRACT FROM THE ANSWER.—“1st. There is in the school law nothing to prohibit corporal punishment in the schools; and, therefore,

“2nd. Expulsion and suspension are not the only means of securing good order and discipline in them.

“I need not add that it should, of course, be resorted to only in extreme cases, and then administered with great discretion.

“The schools would fail of fulfilling one of their most important missions, if the only way of meeting the cases of those boys who most needed controlling and restraining, was to turn them loose upon the streets, free from all control and restraint.”

Good schools are orderly, industrious, cleanly in school-room and surroundings, cleanly in language and morals. They are thorough and scholarly. They tend to build up character; to make the boys who attend them manly, and the girls womanly. They are known by their influence outside the school-room as well as by the work they do inside the building.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. McCHESENEY, to whom all communications in reference thereto must be addressed.

PLANETS IN NOVEMBER.—*Mercury* sets on the 8th at 5 h. 38 min. P. M.; on the 18th, at 5 h. 12 min. P. M., and on the 25th at sunset. He is near the moon on the 4th, stationary among the stars on the 13th, and near Mars on the 28th. *Venus* is an evening star. She sets on the 6th at 6 h. 13 min. P. M.; on the 16th at 6 h. 22 min. P. M., and on the 26th at 6 h. 44 min. P. M. She is near the moon on the 4th, and at her greatest distance from the sun on the 14th. *Mars* is a morning star, rising on the 6th at 6 h. 12 min. A. M.; on the 16th at 6 h. 5 min. A. M., and on the 26th at 6 h. 0 min. A. M. He is near the moon on the 2nd, and in his descending node on the 26th. *Jupiter* sets on the 7th at 4 h. 29 min. A. M.; on the 17th at 3 h. 51 min. A. M., and on the 27th at 3 h. 5 min. A. M. He is near the moon on the 13th, and due south on the 15th at 8 h. 59 min. P. M. *Saturn* sets on the 7th at 5 h. 39 min. A. M.; on the 17th at 5 h. 1 min. A. M., and on the 27th at 4 h. 24 min. A. M. He is near the moon on the 14th.

ACCORDING to a recent report of the Boston Board of Health, appreciation of good sanitary conditions is steadily increasing in that city. Requests for the inspection of premises are now frequent, while a few years ago obstacles were thrown in the way of inspectors by landlords. This regard for proper sanitary construction is not confined to any class, but is exhibited alike by the owners of elegant mansions and of the most ordinary dwellings.—*Popular Science Monthly*.

IN one of the medical journals for August, Dr. Webber has an interesting article on the use of water in disease. He contends that the statement, copied so extensively in our school physiologies, recommending abstinence from drinking at meals, is wrong. He has frequently found in his practice that the premonitory symptoms of disease yielded readily to an increased quantity of drink taken at meal time. He states that, "water taken with food favors digestion; when taken into the stomach a part is absorbed by the gastric vessels, carrying with it the soluble constituents of the food. So much as is not immediately absorbed assists in softening and breaking up the larger particles of food, and thus aids in the gastric digestion by facilitating the action of the gastric fluids."

IN a lecture delivered before the American Association for the Advancement of Science, in August last, Mr. Bell, the noted electrician, gave an interesting account of some investigations and experiments he had made in connection with Mr. Sumner Painter, for the purpose of producing sound by means of light. They were successful in producing audible speech by means of light between stations over two hundred meters apart. Not only were their experiments successful with sunlight, but also with an oxyhydrogen light, and even that of a kerosene lamp and a candle. Their experiments were made at first with selenium, but they subsequently ascertained that sound could be produced by the action of variable light from substances of all kinds when in the form of thin diaphragms.

It has always been an interesting question among naturalists how insects, and more particularly the pupa, resist congelation. In a late number of *Les Modes*, Dr. Jousset de Belleme states that it is probably due to the organic transformations taking place in the pupa. It is certain that there is a disappearance of certain muscles that have served for the larvæ and formation of new ones to be used by the perfect insect. Such work could not be done without a reciprocal liberation and consumption of heat, which would compensate one another if the reconstructed muscles were the equivalent of those destroyed. But the muscular system of the larvæ is much more considerable than that of the perfect insect; hence

all the heat rendered disposable by destruction of old muscles is not utilized in construction of new ones. Further, uric acid and its derivatives are found abundant in the insect which has been metamorphosed; and this is another proof of the existence of active combustion during the pupal period.

AN appropriation bill, passed by the United States House of Representatives, provides for the survey of the Gulf Stream from its origin to the Sargasso sea. The plan embraces soundings, deep-sea temperatures, and observation of the currents.

Two eggs of the extinct great auk were sold at auction in Edinburgh recently, both being purchased by Lord Lilford; one at £100, the other at 102 guineas—probably the largest sum ever paid for a single egg, with the exception of that of the moa, a single specimen of which was sold in the same place in 1865 for £200.

It is reported in the *Moniteur Scientifique* that Dr. G. Schmitz's hypodermic injections of pilocarpine in certain diseases of the eye had not only the effect of curing the diseases, but of restoring the hair on the heads of the patients. One man, aged sixty years, was quite bald, and was suffering from double cataract. Three injections of the pilocarpine were performed in fourteen days. The membrane over the pupil of the eye disappeared, and the head first became covered with a thick down and then with an abundant crop of partly white and partly black hair. Another patient, aged thirty-four, had detachment of the retina, and was bald on the top of his head. Two injections cured his eyes and reproduced his hair.

ENGLAND has a new pest, the tipula grub, which ultimately blossoms into a "Daddy Longlegs." It goes to the root of every green thing with amazing appetite, and so serious are its ravages that the Royal Agricultural Society has issued an elaborate description of it and its little ways.

THE researches of Dr. Bollinger show that the milk of cows suffering with tubercular disease may communicate the affection to human beings. As five per cent. of cows advanced in life suffer from this disease, the doctor believed the danger to be considerable. Boiling the milk is not a safeguard.

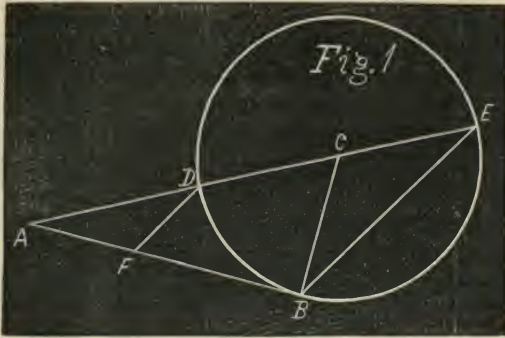
MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

J. F. KLENCK, of San José, writes:

I take the liberty of presenting here a theorem and two solutions relating to the celebrated and important problem of dividing a given line into extreme and mean ratio. The references are to Davies' Legendre.

Solution 1.—By Prop. XXX, Book IV, the tangent AB, figure 1, is a mean proportional between any secant, as AE and its external segment AD; but when the secant passes through the center of the circle C, its internal segment is equal to the tangent, (Problem IV, Book IV) and consequently we have the proportion, AE:DE::DE:AD. If we now draw BE, and DF parallel to BE,



AB, the given line, will also be divided into extreme and mean ratio, (at the point F) Prop. XV, Book IV. It will be seen that no special algebraic demonstration is required, and this solution is, therefore, much simpler than the one commonly given in our text-books. This method appeared in Germany several years ago, and has been adopted by some late authors.

THEOREM I.—If a line be divided into extreme and mean ratio, and the smaller part be cut off from the larger, then will the latter also be divided into extreme and mean ratio.

THEOREM II.—If a line, divided into extreme and mean ratio, be produced, making the produced part equal to the greater segment, then will the whole line be divided into extreme and mean ratio.

[To be continued in the next number of the JOURNAL.]

The following is MR. STURGES' solution of—

PROBLEM 33.—Borrowed a sum of money at 9 per cent. simple interest, and loaned it out again at 7 per cent. compound interest; in what time will I gain the amount borrowed?

Solution.—Suppose the sum borrowed to be \$1.00, and put t for the time required to gain this sum:

Then, by the conditions, we have,

$$\$1 \times (1.07)^t - (\$1 + \$1 \times .09t) = \$1. \quad (1.)$$

From (1.) transposing and dropping the "\$" sign,

$$(1.07)^t = 2 + .09t. \quad (2.)$$

By consulting a table of compound interest, we find that the compound interest of \$1 for 19 years at 7 per cent. is \$2.616527, and for 20 years it is \$2.869684; the simple interest of \$1 for 19 years at 9 per cent. is \$1.71, and for 20 years it is \$1.80. Hence the time required to gain \$1 is between 19 and 20 years. Let x = the fraction of a year:

$$\text{Then from (2.) } (1.07)^{19} + (1.07)^{19} \times .07x = 2 + 1.71 + .09x. \quad (3.)$$

Reducing (3.) $.16315689x = .093473$.

$$x = .5729 \text{ yrs.} = 6 \text{ mo. } 26 \text{ da.}$$

Therefore $t = 19 \text{ yrs. } 6 \text{ mo. } 26 \text{ da. } \textit{Ans.}$

PROF. NORMAN, of Gridley, writes:

Can this familiar old problem be solved by arithmetical rules? We claim that it can, and would like the readers of the JOURNAL to try it.

PROBLEM 34.—Three men, A, B, and C, buy a grindstone 60 inches in diameter, each paying one-third the cost; how many inches must each man grind off in order to use his share of the stone?

PROBLEM 35.—A pendulum in Vallejo having a bob weighing 12 pounds avoirdupois, loses 6 minutes in 24 hours.

1. What is the length of this pendulum from the point of support to the center of oscillation?

2. If an attachment sliding upon the pendulum rod be placed 20 inches above the center of oscillation in this pendulum, what must be the weight of this attachment to cause the pendulum to keep correct time, the pendulum to vibrate once every second?

C. B. TOWLE.

[The foregoing problem was given to the Vallejo High School by City Superintendent, J. E. Abbott.]

SUMMER INSTITUTES.

HUMBOLDT COUNTY.

OWING to the absence of the editor of the JOURNAL at various institutes last month, mention of the institute held in Eureka in September was omitted from our last issue.

Humboldt County is noted for its large proportion of first-class teachers, and on Tuesday morning at 10 A. M. preliminary organization was completed, and the editor of the JOURNAL, who had been engaged to conduct the exercises, had settled down to work on the subject of United States History. In the afternoon Geography was taken up; talks on methods and class exercises alternating. The teachers of the county displayed an active interest, and proved themselves well informed on the subjects discussed. An active part was taken particularly by Mr. J. B. Brown, who has for twelve years been principal of the Eureka schools; Mrs. J. B. Casterlin, one of the best primary teachers in the State; Dr. John Ashton, a fine elocutionist and an able man; Mr. N. S. Phelps, a young, enthusiastic teacher; Messrs. Hickman, Murray, Inskip, Day, Maurer, and Misses Williams, Parker, and others, who are doing fine work.

We must not forget to mention our meeting with one of California's veteran educators in the person of Mr. Ahira Holmes, former principal of the State Normal School. Mr. Holmes had not been teaching for the last fifteen years, but has recently "resumed the birch" in the pleasant shades of the cedars and pines of Humboldt.

Too much praise cannot be awarded to Supt. J. B. Casterlin for his able and conscientious administration of school affairs in this county. Under his charge the schools have been benefited in every way. School-houses have been improved; a more intelligent, better class of teachers has been brought in, and the people taught to realize the value of an efficient superintendence.

SOLANO COUNTY.

In the October JOURNAL brief mention was made of the institute held in this county, which barely did justice to the thorough preparation made therefor by Supt. A. W. Sutphen, and the complete success which attended the entire session. Mr. Sutphen has devoted himself earnestly to the duties of his office, and his experience in other States evidently has proved advantageous in his management of school affairs in Solano County. We hear many expressions of satisfaction at Mr. Sutphen's success in making this session of the Solano County Institute more valuable than any of its predecessors.

YOLO COUNTY.

That Yolo has at last, in J. W. Goin, a superintendent earnest and capable, was evidenced this year by the interesting and valuable session of the institute held in Woodland October 13th, 14th, and 15th. From first to last the institute was a complete success—better in every respect than any ever before held in Yolo County. A well-prepared programme had been distributed beforehand; the more experienced teachers of the county came prepared to give the benefit of their experience to their younger collaborators. Following are the subjects presented: "Methods of Teaching Reading," by Mrs. Sue E. Grant; "Spelling for Primary Classes," Mrs. Lyde G. Ayers; "Word Analysis," Miss S. E. Lowe, Plainfield Grammar School; "Grammar and Composition," Ben. F. Howard; "Arithmetic—Fundamental Operations and Fractions," by Peter Larew; "Percentage and Interest," La Fayette Lillard; "United States History," H. D. Lawhead; "Geography," by C. B. Crane; "Penmanship and Drawing," by H. L. French; "Physiology," by S. B. Fisher, and "School Government," by J. R. Little. Evening lectures were delivered by Prof. H. B. Norton, on "The Impending Planetary Conjunction"; and by Mr. Lyser, of the JOURNAL, on "A few favorite Authors and their Books." State Superintendent F. M. Campbell was also present during the first day of the session, and delivered an address on "Secondary Education."

CORRESPONDENCE.

FOUNDING OF THE UNIVERSITY OF SOUTHERN CALIFORNIA.

THE most notable of recent events has been the founding of the University of Southern California. Ten years ago, when we first saw the spot on which the single edifice of the new institution has been lately erected, a wide *pampa* of the tallest mustard stretched from the City of the Angels to the sea; and the most daring prophet had not dreamed that this remote suburb would become one of the most fashionable and desirable additions to the original town. Lovely villas now nestle in the surrounding greenness, where evidences of refined rural taste show how actively the leaven of progress has been working during the last few years. It will be the work of a few months to beautify the treeless *campus* with grass carpets and flowering borders, and to give this youngest abode of learning a more inviting aspect than pertains to many venerable seats. Nor will it be long ere the modest building, dedicated on Saturday week to "Christ and sound learning," will expand into ample halls adorned and furnished with all the accessories which the education of the present day demands for the perfect training of youth.

I did not mean to prophesy, but merely to record the proceedings and note the significance of some of the speeches on this interesting occasion. The day was auspicious, and the session of the Methodist Episcopal Conference, during which educational discussions had taken place, had created a very general interest in the university movement, which is strictly a denominational one, so far as the scope, responsibility, and design is concerned.

Once this great and powerful body of Protestants bore the reproach of illiteracy; but the inherent force born of supreme religious conviction, had to become intellectual as well as spiritual. So there were giants in intellect like McClintock, Stevens, Haven, sent to redeem Methodism from the contempt of scholars, and to-day the denomination contains some of the ripest and most advanced thinkers and writers; and its educational policy has dotted a line across the continent with seminaries and colleges for both sexes.

This University of the South is planted at the gate of Mexico, a vast and inviting field for missionary enterprise. Three zealous Methodists, Rev. A. M. Hough and the brothers Widney, of the Board of Directors, some two years ago came to the conclusion that bad times and business stagnation furnished the Lord's opportunity for the commencement of this grand enterprise. So, "with nothing to lose and everything to gain," they began to agitate, carefully maturing their plans. Real estate men began to discuss the advantages of different locations, hinting at offers. A site was to be purchased sufficiently large, and funds for university buildings obtained by the sale of a portion of the land for residence lots. Citizens of East Los Angeles offered a desirable tract for \$40,000. Landholders of West Los Angeles, among them Gov. Downey, offered to give outright alternate lots in a very desirable tract, to the value of \$60,000, provided that when the sum of \$8,000 was realized from the sale thereof, a building should be erected, and the University enter upon its work. The business management of the university property is vested in a Board of Directors; the educational management in a separate board, of which the President is a member. It is sufficient to say that these especial features of the organization are commendable for their simplicity and good sense.

The public exercises of laying the corner-stone were of unusual interest. After singing and prayer, Rev. A. M. Hough, one of the original projectors, read a condensed statement of the history of the movement, and of the financial condition and prospects. He was followed by ex-Gov. Downey, whose efforts in behalf of the public schools of the State during the period of storm and stress are too well known to need comment.

Gov. Downey said:

"He was profoundly impressed with the scene, with the presence of such a multitude gathered in the interest of education. He had often thought of the millions going down to oblivion with faculties undeveloped; all the glorious possibilities of humanity dwarfed and withered for want of the culture we claim to be the dearest of human rights. He had often thought of the loss to the world through popular neglect and indifference to education. That

' Full many a gem of purest ray serene,
The dark, unfathomed caves of ocean bear;
Full many a flower is born to blush unseen,
And waste its sweetness on the desert air,'—

is a sentimental regret of the poet. The ocean gem and the desert rose are symbols of the sadder waste seen by the patriot and philanthropist, where even the clear eyes of the child are dull to the perception of truth and goodness, and the broad forehead bears not the stamp of eager intelligence, through neglect. We look back from our present stand-point into the ages when such neglect was general, almost universal, as into a terrible abyss; and we then see the significance of an occasion like the present; that it is fraught with grandeur; that it signifies happiness, civilization, culture, *increase of material usefulness to the race*. We realize that out of just such humble conditions as these we contemplate to-day have come all the beneficent movements which make the beautiful and humane nineteenth century.

"We can imagine a future generation looking back on our humble efforts at progress with a kind of smiling commiseration; but we have this in common with the greatest that shall be, viz., the pursuit of truth for its own sake; the elevation of humanity above all the oppressive influences which have obscured the divine essence, not yet comprehended by the wisest, not wholly lost in the most ignorant and depraved. The Divine comprehends more and more as we become worthy of receiving it!

"In these days, when all are scholars, readers, and metaphysicians, it is not easy to say anything new. For myself, filled as life is with ordinary cares, I gladly appropriate the reflections of those whose callings

give them time and opportunity to weigh the relations of nature, science, the mind; and I will quote from Rev. Horatio Stebbins, one of the living, acting citizens of our own state. He truly says, 'Essentially there is no conflict between *religion* and *science*, and never can be. Their boundaries are undefined, as the boundaries between the known and the unknown, the apprehended and the comprehended, always will be.'

"This is a beautiful sentiment and full of truth. There must be no conflict, because all future developments will only prove and enhance the greatness of the lowly Prince—born in the stable, not 'in the purple'—whose teachings have given us the ideals of moral grandeur, and made humanity and civilization possible in the earth. The teachings which have led captivity captive, robbed the grave of its victory and death of its sting, are potential forces which may be relied upon to complete the work for our race.

"The inauguration of an institution fostered by the most powerful religious organization in the United States is full of significance. As citizens of Los Angeles we feel these happy surroundings, this beautiful plain rimmed around with the majestic Sierra, this unrivaled climate, this teeming fertility of soil, ought to produce and foster a higher development of body and mind. We expect grand results from the *Alma Mater* of an Arcadian population.

"I am reminded to-day of the humble graveyard on a foreign hill-side, overlooked by a little church and simple observatory, where rests all that is mortal of Copernicus. It was *education* which gave this humble priest power to discover and unfold the mysteries of the solar system before Columbus discovered the vast new continent. Copernicus lived and died in perfect harmony with the church. So Agassiz, of ever happy memory, served science with ardor, yet without forfeiting the regard of the orthodox in New England. The institution we to-day inaugurate proposes to inspire an equal zeal in the youth it nurtures, for the truths of morality and of science; to develop at the same time the power of investigation and the faculty of reverence. Better than the ancient *gymnasias*, which trained the body alone—better than the training which Rome gave her sons in forum or camp, our colleges conserve the interest of morality, science, and literature. Sound scholarship led by charity and love has shed light into nearly every corner of this little globe—has tended vastly to alleviate the burdens of humanity; and we will gladly cherish in our midst another seat of learning, which for many generations will point to that sphere of excellence our hearts yearn for, and which is promised to those who perform their part here below."

These notes by no means do justice to the admirable catholicity of sentiment which has always marked Gov. Downey's educational position. He was followed by Bishop Wiley, who, from a narrower stand-point, eloquently urged the duty of Christians in the support of *Christian* institutions. He said: "We have the public schools, the high schools, the State universities, which, it is charged, are Godless institutions, whether justly or not; we want here Christ in every recitation-room." I quote: "The breathless attention with which the audience gave ear to this plea for sacred *versus* secular education, showed that the bishop carried conviction to the hearts of his hearers. This speech was far more lengthy and labored than the address of Bishop Simpson, whom it introduced, and who, by a few master-strokes, repaired the damages of Bishop Wiley to our national line of defenses against ignorance and crime. Having added knowledge, experience, and charity to his ardent zeal as a preacher and bishop, his appeal to heads and hearts left nothing to be added or desired. "When public schools, the conservators of republican government, left the student, the higher institutions opened their doors—all useful, all serving a more or less pronounced and specialized need." Every well-founded college became the parent of other colleges, as this university was, in one sense, the offspring of that at Santa Clara. While denying the least sympathy with "modern latitudinarianism," Bishop Simpson outlined for the new university a culture truly wise and liberal; not confined to the intellect alone, but arousing the spiritual nature, and calling for its noblest exercise.

No better servitor of the public schools has ever appeared than W. T. Harris, late superintendent of the schools of St. Louis. He said, before the last National Convention of Teachers: "Ours is a generation, sound in neither body, mind, or soul, and the next is no better; and even the most conservative are beginning to recognize the fact, that our education hitherto has been too much confined to the cultivation of the intellect alone, and already the reaction has set in, in favor of some degree of physical culture, while our methods of mental training are constantly improving; but of moral and religious training in our public schools we have as yet but the faintest idea."

For myself, I do not wince at any just criticism of public school work, higher or lower; or whether it comes from consecrated or profane lips. It seems to me a great encouragement, when a Catholic ex-governor, quoting a "liberal Christian," assists in dedi-

cating a Methodist Episcopal University; or when good Bishop Simpson and the leader of the Concord School of Philosophy, in almost identical language, seek completeness for our educational edifice by remedying the weakness on the moral and spiritual side. We all seem to be marching to victory, though we hear different drummers.

PASADENA, Los Angeles Co., Sept. 26th, 1880.

JEANNE C. CARR.

NEWS RECORD.

Foreign and Domestic.

The Turks are concentrating a large number of troops in Smyrna.

Prince Hohenlohe is seriously ill at Berlin with gastric fever.

A St. Petersburg dispatch announces that the Tekki-Turcomans have again resumed the offensive.

A report reached Berlin that the Czar intends to abdicate in favor of the Czarevitz.

A terrific snowstorm in the province of Buenos Ayres, September 18th, caused the death of 700,000 cattle, 500,000 sheep, and 250,000 horses.

Chile and Peru have accepted the offer of mediation made by the United States.

The Sultan of Turkey has signed an *irade* ordering the surrender of Dulcigno.

Mount Baker, in Washington Territory, is in a violent state of volcanic eruption.

President Hayes, General W. T. Sherman, and party, spent September and October in visiting the different parts of California and Oregon. They were everywhere received with consideration and enthusiasm.

In the October elections Indiana and Ohio went Republican by large majorities. Arkansas and West Virginia went Democratic by majorities equally decisive.

The war between Peru and Chile is not yet ended. The fleet of the latter power, a few days ago, bombarded Callao and other ports.

There are again rumors of war in Europe.

The Russian wheat crop is almost a failure.

Educational.

The city of Berlin, Germany, with a population of about one million, has a university

with some three thousand students; fourteen gymnasiums equivalent to our colleges; seven Realschulen of the same grade as the gymnasiums, without the classical course; several technical schools, having altogether 12,000 to 15,000 students; three normal schools, with nearly 500 students; and 262 public and private schools, elementary and higher, with 132,912 pupils. There is an educational museum in the city, a teachers' library with 1,426 volumes, and 104 pupils' libraries. Many of the school buildings are plain, and the furniture unequal to our own.—*Penn. School Journal*.

EDUCATIONAL CONGRESS AT BRUSSELS.—An interesting report of the meeting of this important Congress appears in *The Schoolmaster*, (London, Eng.) for Sept. 4th. It was on the very largest scale, being attended by members of the teaching profession from all parts of the world. Many of the subjects discussed, such as the coeducation of the sexes, and the conflict of education laws with those of the Church, are to us dead issues. On the subject of *Kindergarten* and the methods of Froebel, there was quite a warm discussion, generally favorable to the system, chiefly among the lady speakers. M. Emile Frelet, of Paris, read a valuable paper on School Hygiene, and Dr. Jarvel on Short-sightedness, or Myopia, which he found by an experience of twelve years very rare in infancy, being generally produced at school—prevailing especially in Germany, on account of the practice of reading at night with an imperfect light. As to emulation as a means of school discipline, the Congress had a divided opinion; but on the whole the balance of papers read was against the distribution of prizes, the general effect of which was thought injurious. The Congress closed after a week of earnest labor and discussion, carried on with the utmost good humor.

The moral condition of the public schools in Massachusetts is arousing personal attention from the women of the Old Bay State, through the Woman's Suffrage Society. The investigations recently made have de-

veloped in certain towns a condition of things which may well excite the fears of mothers concerning their children. In many schools teachers confessed that they were greatly troubled by petty thefts among their pupils, by profanity, and by the circulation of impure literature. Complaints of this kind were so general that the Woman's Suffrage Society propose to call a meeting of parents in large towns and cities, and to lay facts before them. Women are surely working in the most important field when they labor, either in the family or the school, for purity of morals among children and youth.—*Harper's Bazar.*

The Art Normal School of Massachusetts, under the direction of Mr. Walter Smith, was opened last week, with a large number of pupils and increased opportunities of usefulness. The primary object of this school is to train teachers of drawing for the State, it being in the statutes of Massachusetts that industrial drawing shall be taught in all its schools. Any qualified person can be admitted to this Normal Art School for a four years' or a limited course of study, with free tuition, and an outlay for books and instruments not exceeding twenty dollars a year. It is expected that the graduates will find employment in the public schools, but no graduate is expected to remain idle because such opportunity of employment is not offered. While the public schools have largely drawn upon these graduates for special teaching, a portion of them are employed in private schools, and others pass directly to good positions as designers and skilled workmen. Within the past year three superior graduates have been sent to as many States, to superintend instruction in industrial drawing in schools and universities under State control.—*N. E. Journal.*

J. M. Bloss, a prominent Indiana educator, was elected State Superintendent of Public Instruction at the recent State election.

Samuel Stehman Haldeman, A. M., the distinguished professor of comparative philology in the University of Pennsylvania, died at his home in Chickies, Lancaster County, on Friday evening, Sept. 10th, aged 68 years.

M. Jules Ferry has just appointed a woman, Mlle. Juliette Dodu, who received the ribbon of the Legion of Honor for noble conduct during the late war, to the inspectorship of all the schools of France which have children under six years of age.

Supt. Eliot, Boston, has resigned. His health is not good. The *New England Journal of Education* appears much dissatisfied with his administration, and evidently looks on him as a theorist rather

than as a practical schoolman. As his successor four candidates are prominently named: Dr. Dunton, of the City Normal School; Mr. Seaver, of the English High School; Mr. Mason, one of the supervisors; and Dr. Harris, recently of St. Louis. Why not re-appoint John D. Philbrick? That gentleman is certainly one of the ablest educators this country has ever produced; and at this distance, it looks as if a great injury was done the Boston schools when local jealousies and local quarrels compelled his resignation two years ago. What a pity it is that our communities always wait for a man's death before they do him justice!

It is stated that a malarial fever has again broken out at Princeton, N. J. Several students of the college have been taken sick, as well as a few of the town residents.

STUTT GART.—The celebrated polytechnic school of Stuttgart has 72 professors and 506 students. Of these students, seventeen are from the United States. The income of the institution amounts to \$75,000 a year.

GERMANY.—There are at present eighty-three educational journals published in the German empire. Of these, two are dailies, thirty-four weeklies, and the rest monthlies and semi-monthlies. Ten of the eighty-three journals are published at Berlin, six at Leipzig, and the rest in various provincial cities. The *Allgemeine Deutsche Schulzeitung* is probably the oldest educational periodical in Germany. It is at present published by Professor Story, at Jena. Several years ago Sunday-schools were hardly known in Germany, while at present there are 1,977 schools, with 8,325 teachers, and 162,251 pupils.

THE COMENIUS LIBRARY AT LEIPZIG.—This library was established a few years ago in honor of the great educator whose name it bears. In a comparatively short period it has collected over 17,000 educational works.

"Tom Hughes at Rugby," was literally exemplified Oct. 5th, by the formal inauguration of the enterprise for planting a colony at Rugby, East Tennessee, on the line of the Cincinnati Southern Railway, 220 miles south of Cincinnati. Mr. Hughes, who has organized and executed the plans for this colony, made an address of much general interest. Mr. Hughes is making this colony his home, and designs to make it a type of the highest Saxon civilization.

The total attendance at the New York City public schools on the opening day was 113,893, an increase of 6,495 over last year. Philadelphia is said to have an attendance of about 104,000.

Two new fifteen-room school buildings are to be erected at once: one on Cottage Grove school lot, to cost \$42,384; and one on Kedzie avenue and Walnut street, to cost \$43,868—both in the city of Chicago.

In Wisconsin, Illinois, and other States, many districts own the school books, and they all report the plan successful. A few districts in Nebraska have adopted the measure. It insures a complete supply on the opening of the term. It secures uniformity. It reduces the cost. So far as reported, superintendents who have seen the experiment are satisfied with it.

Herbert Spencer, it is announced, will make a round-the-world tour next year. The educators of the United States will be ready to do him honor, since he is one of the thinkers.

Personal.

Herbert Spencer is about to publish a critical and cruel inquiry into the works of Thomas Carlyle.

Mr. W. W. Corcoran, the aged and philanthropic banker of Washington, is said to have given to charitable institutions and works of benevolence and public improvement generally more than \$3,000,000.

This is an age of statues. It is in contemplation to raise one at Missolonghi to Lord Byron; the Italians are to raise another to Raphael; and the first stones have been laid at Genoa for one to Mazzini, the man who fulfilled the dream of Dante, and falsified Metternich's sneer that Italy was a "mere geographical expression."

Wilkie Collins begun life as a tea merchant, but after a short time studied law at Lincoln's Inn, but presently abandoned that for literature. He is a rapid inventor and slow producer; writes at a massive desk, on one side of which hangs a picture of his father, and on the other is a tin box containing plots and schemes and ideas jotted down. In composing he first finds a central idea, then fits the characters, lets the characters evolve their own incidents, and begins his story at the beginning.

General Notes.

HARD WORDS TO SPELL.—At a competitive examination of teachers to select a principal for a district school, where the salary was \$1,500 per annum, eighteen gentlemen who had been principals and four ladies were examined. The following words were given to spell:

Poniard,	Allege,
Separate,	Exhilarate,
Business,	Hymeneal,
Mingle,	Cat's-paw,

Scintillate,	Daguerrean,
Mignonnette,	Bouquet,
Privilege,	Excellent,
Ethereal,	Supersede,
Ecstasy,	Ventilate.

One lady, a graduate of Packer Institute, Brooklyn, spelt all correctly, and she was the only person that did. One gentleman spelt all but one word rightly.

Can any of our readers do as well?

PRONUNCIATION vs. SPELLING.—A copy of Webster's Unabridged Dictionary was offered at a teachers' institute in Pennsylvania to any teacher who would read the following paragraph and pronounce every word correctly, according to Webster. No one succeeded in earning the dictionary, although nine teachers made the attempt: "A sacrilegious son of Belial, who suffered from bronchitis, having exhausted his finances, in order to make good the deficit, resolved to ally himself to a comely, lenient, and docile young lady of the Malay or Caucasian race. He accordingly purchased a calliope and a coral necklace of a chameleon hue, and securing a suite of rooms at a principal hotel, he engaged the head waiter as his coadjutor. He then dispatched a letter of the most unexceptional caligraphy extant, inviting the young lady to a matinee. She revolted at the idea, refused to consider herself sacrificeable to his desires, and sent a polite note of refusal; on receiving which he procured a carbine and bowie knife, said that he would not forge fetters hymeneal with the queen, went to an isolated spot, severed his jugular vein, and discharged the contents of his carbine into his abdomen. The debris was removed by the coroner."

When soil is taken from a deep well or other cut in the earth, plants often appear on the newly-thrown-out soil, and the popular impression is that they have sprung from seeds that may have been buried in the earth for indefinite periods. There are many of these popular impressions floating about in connection with the appearance and disappearance of plants. On the old overland wagon-road to California, the common prairie sunflower appeared abundantly, and to this day, a belief prevails in some quarters that the seed was sown by the Mormons, so that by the aid of the growing plants they might find their way, in case they should be compelled to turn eastward again. Another curious legend has recently been noted by Mrs. Bingham, of Santa Barbara, in the *Botanical Bulletin*. It is that, when California was ceded to the United States, the Catholic fathers were so enraged that they cursed the ground, which then brought forth the *Malva borealis*, which is one of the worst weeds in that country.

In Europe the usual sign used by barbers is not the striped pole, but one or more brass disks or dishes, suspended over the street. The origin of the use of these different signs is not perhaps generally known. Until the time of Louis XIV., in France, and of George II., in England, the offices of barber and surgeon were united. The sign then used was the streaked pole, with the basin suspended from it. The former was to represent a bandaged wound, and the latter the basin into which the blood flowed. The barbers, after their separation from the surgical profession, appropriated the sign, apparently without appreciating the joke they were playing upon themselves.

It is stated by a writer in *Blackwood's Magazine* that the deaths by suicide among Europeans annually amount to sixty thousand, or at the rate of about one to every five thousand of the population, and that suicides have been rapidly increasing in all

parts of Europe for the last hundred years. The writer says that self-destruction is now five times greater than it was a century ago.

It seems that in Russia there are no laws to regulate the age at which children may be put out to work, or to limit the number of hours they may be employed. Consequently the draught upon children of a tender age is excessive. Quotations are made from the recently published work of a Moscow professor, which states that in all the workshops of one district children labor from twelve to fourteen hours a day; that in some factories persons of six and eight years of age labor twelve hours per day; and that in two establishments children of ten years of age work in the one sixteen and in the other seventeen hours per day. This fearful state of affairs is being exposed by the newspapers, which it is hoped will bring about a change for the suffering little children.

EDUCATIONAL INTELLIGENCE.

CALIFORNIA.

SAN FRANCISCO COUNTY.

A school lot was at last purchased in October, on which an eighteen-class building will be erected for the use of the Fourth and Clara St. schools. The building at present occupied by that school is a disgrace to the city, and a constant source of danger to the little ones crowded within its inclement and rickety walls. It is high time for the erection of a new building.

The school department lost one of its most cultured and refined ladies, last month, in the marriage of Miss Margaret I. Crothers, of the South Cosmopolitan Grammar School, to Mr. Loring Pickering, senior proprietor of the San Francisco *Call*.

It is reported that in a few days one of our most charming young teachers, in the person of Miss Katie Deane, daughter of Mrs. Margaret Deane, the able principal of the Columbia Grammar School, is to brighten the gloom of journalism by uniting herself with Mr. M. H. De Young, of the San Francisco *Chronicle*.

The Board of Education, at their last meeting in October, raised the salaries of the male vice-principals in the department. We regret that in doing justice to some of the hardest worked and most deserving employèes of the department, they did not extend their action to the female vice-principals, who are equally entitled to the addition. We hope to see this matter rectified at the earliest possible opportunity.

We understand that Supt. Taylor's forthcoming report is specially strong on the subject of "secondary education."

Miss A. H. Catlin was promoted to the second grade of the South Cosmopolitan Grammar School to fill the position made vacant by the resignation of Miss Crothers. Miss Catlin is a fine teacher and an acquisition to the South Cosmopolitan School.

At a recent meeting of the Social Science Sisterhood, Miss Kate Kennedy, principal of the North Cosmopolitan Grammar School, read a strikingly original paper on "Edu-

cation," which we wish might be enjoyed by the readers of the JOURNAL.

By order of the Board, and under direction of Supt. Taylor, the teachers of the different grades now have monthly or semi-monthly meetings for directions to teachers and instructions in drawing and music. There is already noticeable an increased efficiency in teaching these branches, and a more general satisfaction with the work done.

MARIPOSA COUNTY.

The Teachers' Institute will meet November 17th.

YUBA COUNTY.

The regular semi-annual examination of teachers will be held at Marysville, December 7th.

COLUSA COUNTY.

The Washington school-house in this county was destroyed by fire on the morning of the 28th of October. Loss about \$1500, of which \$1000 was covered by insurance.

NEVADA COUNTY.

At its recent session the Board of Examination granted first-grade certificates to Miss Mary Anderson and Mr. B. F. Stuart.

TRINITY COUNTY.

Prof. Kleeberger has resigned the principalship of the Weaverville school. His successor is Prof. D. Cummings, late tutor in the University of California.

TEHAMA COUNTY.

The Freeman school-house was burned the 10th ult. The fire began while a Sabbath-school was in progress, and made such headway before it was discovered that the building was consumed.

The school at Tehama is in a flourishing condition under the tutorship of Misses Batten and Robinson.

Supt. Yager, who has just completed a tour of the county, reports the schools in a prosperous condition.

LOS ANGELES COUNTY.

The University of Southern California, at Los Angeles, began its first term the 1st ult. under very encouraging auspices.

Mrs. Kate Hare, late of the San Francisco public schools, is assisting Prof. J. M. Quinn at Anaheim.

TULARE COUNTY.

Mr. W. J. Sargent, a graduate of the Virginia Military College, and a teacher of long and successful experience, has taken charge of the Yokohl school.

Mr. M. W. Pepper, an *alumnus* of the University of Wisconsin, is teaching at Antelope.

Mr. W. H. Clark, late of Humboldt County, has taken the Oak Grove school.

Miss A. M. Doud and Miss H. Rutherford have begun work in the Mt. Whitney and Smith Mountain districts respectively.

MENDOCINO COUNTY.

The Ukiah public school has 240 pupils.

SACRAMENTO COUNTY.

J. K. Stevenson is teaching in the San Joaquin district.

SAN JOAQUIN COUNTY.

The Teachers' Institute convenes on the 22nd inst.

AMADOR COUNTY.

Prof. Norton will conduct the Teachers' Institute at Jackson the 15th, 16th, and 17th inst. Upon the adjournment of the institute the semi-annual examination of teachers will be held.

MONO COUNTY.

The Mammoth City *Herald* speaks in glowing terms of the public school in that place, and the thorough work done by its teacher, Miss Fleming.

STANISLAUS COUNTY.

Prof. Wm. Crowhurst, late principal of the Modesta Seminary, has quit the school-room for the lecture field. The Grand Lodge of Good Templars has been fortunate in securing the services of so able an exponent of the teachings of that order.

SONOMA COUNTY.

Santa Rosa and Healdsburg each have their Kindergartens, both of which are ably managed, heartily appreciated, and substantially patronized.

BUTTE COUNTY.

The school in Bald Rock district closed 15th ult. The exercises reflected great credit upon the teacher, and were far above exhibitions usually held in country schools. A party in the evening was thoroughly enjoyed by the little folk. By the retirement of Mrs. T. Cress from the profession, Butte County loses one of her most successful teachers.

Mountain House district has been favored the past summer with the valuable services of Mrs. M. E. Shekels.

SANTA CLARA COUNTY.

Miss Minnie Dohm, who recently returned from Europe, where she spent two years at the best institutions, has been engaged as teacher of German at Otterson Institute, San José.

SHASTA COUNTY.

The Millville school opened last month in charge of Mr. W. H. Adamson and Miss Emma Gibson.

Everybody from far and near around Shingletown assembled at Klotz's Mill 16th ult., to bestow a parting benediction on Mr. S. N. Witherow, the esteemed teacher of that district, who leaves soon for the East.

Mrs. Eliza P. Veeder, well and favorably known as a teacher in our public schools, has accepted the principalship of the Anderson school.

PLACER COUNTY.

The people of Ophir have been fortunate in securing the services of Mr. R. D. Faulkner as principal of their school. Mr. Faulkner is a graduate of the University of Illi-

nois, was very successful in that State, and has given entire satisfaction the past two years in Sonoma County. He began his work at Ophir 19th ult.

WASHINGTON TER.

The Dayton public school opened 18th ult., with 203 pupils.

ARIZONA TERRITORY.

We congratulate Judge Walker, the efficient Superintendent of Pinal County, upon securing the services of Prof. W. F. Cook, who assumed the management of the Male Grammar School, at Florence, 18th ult.

OREGON.

Prof. Rigler is holding a steady hand over the school at Buena Vista, and is evidently master of the situation.

Dr. Gatch, at present professor of English History and Belles-Lettres at the State University, Eugene City—late president of Willamette University, Salem—has accepted the principalship of the Wasco Academy.

The new school building at Independence will be opened 8th inst., with Prof. J. S. Sweet, an experienced and accomplished instructor, as principal, assisted by Mrs. Ida Vaughn.

Monroe Powell teaches the young idea at Scio.

Prof. J. C. Arnold has built a neat and commodious schoolhouse at Pendleton, and began teaching October 4th.

BOOK NOTICES.

BARNARD'S COMPREHENSIVE GRAMMAR.
A treatise on English Grammar and Composition. By Henry Barnard. San Francisco: Barnard & Brothers. For sale by A. L. Bancroft & Co. Price for introduction \$1.25.

In the present deluge of text-books on grammar and language, it becomes a task attended with great difficulty to determine

which of the many have the true *raison d'être*. If the tendency of our day is correct, we would select those books which combine a minimum of theory with the greatest quantity of actual practice. Judged by this standard, Prof. Barnard's book is a success, and will be found a useful, almost indispensable, auxiliary in language-training.

A few extracts from the introduction will give a fair idea of its design and scope. Prof. Barnard says:

"The object of this work is three-fold: first, to reduce to practice the principles of English Grammar; second, to convert what has always been a disagreeable and repulsive study into an attractive and pleasing exercise; third, to improve the classification and definitions, systematize the work of instruction, and render effectual the efforts of the teacher."

Part I is chiefly devoted to the transposition of sentences into Active, Passive, and Progressive Forms, structure of Relative Clauses, Infinitives, Participles, and variety of expression as used in English Composition.

Part II embraces all the Definitions that are necessary to be known in order to command a thorough knowledge of the English language and its structure.

Part III contains a series of exercises in Parsing. Most of the sentences are of difficult construction, and the lessons will serve as models for similar work.

Part IV treats of Analysis and Synthesis, a knowledge of which is quite as essential as that of Parsing, if not more important. It also contains the complete Rules of Syntax, and the exercises in False Syntax are most thorough and complete.

Part V is devoted to the Rules of Spelling and general principles of Orthography.

Part VI presents numerous examples of Correspondence. Most of the letters are written in several forms. The advantage of using the Passive Form in preference to the Active is thus shown, and the mode of suppressing the egotistical expressions in which the pronoun "I" appears is illustrated.

For ungraded schools, this book is likely to be especially valuable. Prof. Barnard's methods of using it are clearly explained, and the industrious student need only follow directions to give himself a thorough and systematic drill in the correct use of English.

We cordially recommend this book to the attention of teachers. They will find it a useful aid—something long needed.

THE PHŒACIAN EPISODE OF THE ODYSSEY. As comprised in the Sixth, Seventh, Eighth, Eleventh, and Thirteenth Books, with Introduction, Notes, and Appendix. By Augustus C. Merriam, Ph. D., Colum-

bia College. New York: Harper Brothers. San Francisco: Payot, Upham & Co.

The introduction and notes bear marks of ripe scholarship and judicious skill in the selection of passages for explanation. Some classical editors are so prolix that they weary the earnest student, and give so much assistance that the lazy student finds their works admirably adapted to his indolence. Others, on the contrary, are so unsatisfactory in their attempted elucidations, and so afraid of giving too much assistance to the bright student, that those of ordinary ability find their *hints* and *notes* worse than useless. Dr. Merriman seems to have hit the happy medium. His explanations are clear and to the point, and his comments are remarkably suggestive. Students will use this text-book with very great advantage. It is well got up, and the illustrations well executed.

AFTERNOONS WITH THE POETS. By Chas. D. Deshler. Harper & Brothers, New York. San Francisco: Payot, Upham & Co.

This is a charming work. Written in an easy, interesting style, it contains a great deal of useful information that ordinary readers do not know where to find. Defining a sonnet as "the diamond of literature," the author proceeds to give a history of the sonnet, and critical notices of the writers of the sonnet, from the earliest specimens down to the present. Many of the sonnets quoted by the "professor" are gems too little known. We wish all our older scholars could be induced to read the book. If their literary taste has been properly cultivated, it is not beyond their grasp. We cordially recommend it to all who can rise above the dyspeptic serial story that characterizes our magazines. The print is clear, the paper good, and the book in every way inviting.

EASY LESSONS IN POPULAR SCIENCE, AND HAND-BOOK TO PICTORIAL CHART. By James Monteth, Author of School Geographies. New York, Chicago, and New Orleans: A. S. Barnes & Co. San Francisco: E. F. Adams, with Cunningham, Curtiss & Welch

This book is calculated to be of the greatest service to that class of teachers, (would there were more of them) who believe that our children should learn something in school of the thousand and one things they are sure to meet in the material world

around them. The pictorial chart, which may advantageously be used with the book, contains a large number of common objects, natural and otherwise, a familiar acquaintance with which marks the cultured mind. To indicate the scope and variety of the book, we will give the titles of a few of its chapters: "What we see About us"; "Water on the Earth"; "Trees and Plants"; "Mountains and Volcanoes"; "Windmills"; "Balloons"; "Animals"; "Insects"; "Mines and Mining"; "Birds—their Nature, Variety, Ingenuity, and Uses." Written exercises in Spelling and Composition are frequently interspersed through the work—an excellent idea.

The headings of chapters above quoted give but a bare idea of the thoroughness, and yet simplicity, with which each subject is treated. Thus, under "Rivers, Waterfalls, and Lakes," we are told all about their uses, about water-wheels, lumber and lumbering, inundations, etc. Under "Wells and Springs," we learn about artesian-wells, pumps, oil-wells, petroleum, etc.

We cordially recommend this book to the attention of teachers. We are satisfied that an acquaintance with its merit will lead to an extensive use.

THE ADJUSTABLE ADDITION TABLET.
School Edition, \$3; Pocket Edition, 30
cts. F. B. Ginn, Oakland, Cal.

Teachers find nine-tenths of their difficulties in arithmetical work owing to inaccuracy in the fundamental rules, and especially in addition. Business men complain of our pupils on this account, and teachers themselves are proverbially slow and inaccurate. The remedy is easy: constant practice. The main obstacle is, of course, the time it requires to write long columns of figures, and the severe mental strain to which both teacher and pupils are subjected by adding in the old-fashioned, laborious way. Mr. Ginn's contrivance obviates both these objections. Endless combinations are presented, and by observing the method Mr. Ginn gives and explains in his advertisement in this number of the JOURNAL, addition becomes purely an automatic process, as accurate as are all mechanical operations. The numeral frame is cheap, and can readily be placed in every school. The pocket edition will be found

very useful. We have no doubt that three months' drill of all grades in a school with this tablet will make an immense difference in the rapidity and accuracy with which all arithmetic work is done.

METHODS OF TEACHING. By John Swett.
New York: Harper & Bros. San Fran-
co: A. L. Bancroft & Co. Price \$1.50.

This book presents us with the results, in a crystallized form, of thirty years' work in education. Thirty years of close observation and successful experience are here concentrated in a bird's eye view of the art of teaching. It is unnecessary to compare this work with the many on the same or cognate subjects that have gone before, yet one point, wherein preceding works on education have invariably been weak, is so emphasized in Mr. Swett's book, that even the most cursory examination reveals the sharpness of the contrast. The whole aim of the book is *to show the teacher exactly how and what to do*. No attempt is made to give us a scientific treatise on education, though even here are presented in a boiled-down form the arguments of eminent authorities, such as Spencer, Mill, Mann, Pestalozzi, Froebel, Hamilton, and Bain. Both by quotations from these authors and original demonstration Mr. Swett shows there is a science of education, and that there can be no actual, successful teaching that is not based on an intelligent following of its principles.

But more particularly in Parts II and III of the work, which occupy about two-thirds of the entire space, does its chief merit appear. It is, *par excellence*, intensely *practical*. To quote the words of the author in the preface: * * * "But what the young teacher most needs is a *definite direction or method*. He will learn to make for himself all necessary qualifications and exceptions in school-room practice. My chief purpose has been, therefore, not an exhaustive treatise on education in general, but a volume of principles, directions, and working models, for the practical guidance of the rank and file in the great army of common-school teachers."

In Part I some of the topics treated in an attractive, telling form are, "The Science of Teaching," "The Art of Teaching,"

“Physical Training,” “School Hygiene,” “Moral Training,” “Intellectual Training,” “School Government,” “The Management of Ungraded Country Schools,” etc., etc.

In Part II are “Condensed Directions for Teaching Common-school Essentials.”

Part III is devoted to “Working Models in Essentials.” In these divisions the young, untrained teacher, the one who misses a normal-school training, will find just the help he needs, presented in a shape instantly available. The methods in the condensed directions are in many instances new, and in all cases are evidently the outgrowth of actual class-room work. The working models have the same strong recommendation; the large space devoted to language training being of especial value.

On the whole, Mr. Swett has given us a book which will be found indispensable to every ambitious teacher, and which will be claimed as a permanent contribution enriching educational literature.

PRACTICAL LESSONS IN ENGLISH. By J. M. B. Sill, A. M., Superintendent of Schools, Detroit, Michigan. New York and Chicago: A. S. Barnes & Co. San Francisco: E. F. Adams.

This book is a decided advance on the old style English grammar. Within its compass of 196 pages is included all that grammar-school children need know of the skeleton of our language. As indicated in the title-page, it consists of practical lessons in English made brief *by the omission of non-essentials*. It is divided into nine chapters, the first of which treats clearly, briefly, and yet at sufficient length, of “Sentences, Clauses, and Phrases.” From Chapter II to Chapter VIII inclusive, we have treated the various parts of speech with copious examples and illustrations. In fact, the book is eminently a working book. It leaves enough to be done by both pupil and teacher, yet supplies each with what is absolutely essential in every good school work, *i. e.*, a great variety of texts and examples. It is easy to see that the author is a practical teacher, and that his book has grown out of his daily work in the school-room. Typographically and in general appearance, pictorial illustrations, etc., the book is a model of beauty.

CHARCOAL DRAWING WITHOUT A MASTER. A complete treatise in Landscape Drawing in Charcoal, with lessons and studies after Allongè. By Karl Robert. Translated by Elizabeth Haven Appleton. Illustrated. 8vo. Cloth. 114 pp. \$1. Robert Clarke & Co., Cincinnati.

MODELING IN CLAY. Instructions in the art of Modeling in Clay. By A. L. Vago. With an appendix on modeling in foliage, etc., for pottery and architectural decoration. By Benn Pitman, of Cincinnati School of Design. Illustrated. Sq. 12mo. Cloth. 72 pp. \$1. Robert Clarke & Co., Cincinnati.

Parents and teachers are prone to undervalue those studies which merely gratify the student's love for the beautiful. Scroll saws and carving tools are ranked with velocipedes and tops, while paints and pencils are looked upon as toys peculiar to “born artists.” It is forgotten that while the amateur may produce nothing of marketable value, he gains mental and manual skill, which only love-work can give. Not the least important, therefore, among educational publications are those designed to assist amateurs in the trades and arts.

The manuals above noticed seem to answer all the more important questions that could be asked by would-be artists in charcoal or clay, and are therefore indispensable in the absence of a teacher.

THE NEW TEXT-BOOK OF PHYSICS. An Elementary Course in Natural Philosophy, designed for use in the High Schools and Academies. By Le Roy C. Cooley, Ph. D., Professor of Physics and Chemistry in Vassar College. Charles Scribner's Sons, New York.

This book will be welcomed by those who have used the text-book on Natural Philosophy, by the same author, since it is a marked improvement upon the latter excellent work. It is fully up with the present state of the science. The definition, “*Physics is the science of matter and energy*,” is fairly followed in the text. Among other good things, we are glad to note (p. 127) a definition of sound which accords with the actual use of the word in all text-books on physics, *viz.*, “*Sound is an undulatory motion in an elastic medium, whose energy can affect the ear.*” Most writers give a definition which makes excusable the otherwise idiotic question, “Would there be any sound were there no ears.”

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DEMAGOGUES IN THE PROFESSION OF
TEACHING.

BY J. M. GUINN.

[Anaheim, Los Angeles County.]

WEBSTER defines "demagogue" as "one who controls the multitude by specious or deceitful arts; a panderer to popular prejudice; an artful political orator." Common usage of the word would seem to infer that the demagogue was only to be found in the political arena, but he is certainly not unknown in other theaters of human endeavor. He may be found in law, medicine, theology, and in the profession of teaching. But wherever found his characteristics are the same. The goal of his ambition is popularity, and it matters little to him by what methods he obtains it. Applause to him is meat; approbation, bread and butter. The howl of the sand-lot is music to his ears; the ribald cheers of the mob thrill him with delight. He measures humanity by its weakness, and not by its strength. He panders to blind prejudice, and would fain climb to power, if he could, over the ruin of all that is good, true, and beautiful. He has a plentiful share of low cunning, and is adroit in the art of deception. He may, and indeed often does, have a good education; if so, he is only the more dangerous and the more to be feared. His characteristics are the same wherever found, but his methods differ according to the different spheres in which he seeks popularity.

In the profession of teaching, when he begins work in a new school, his first move usually is to slander and belittle the work of his predecessors. He reports that they have done nothing but draw their pay; that their methods of teaching were all wrong; that he finds the school in disorder, and the pupils untrained and untaught. He announces, with an assumption of wisdom and a show of importance, that he will work a great reform in the school. He will bring order out of confusion; system out of chaos. He visits his patrons at their homes, and delights them with praise of their children. He praises, flatters, cajoles, wheedles, fawns, resorts to any and all tricks that he thinks will gain him popularity. Chameleon-like, he assumes the color of his surroundings. In a religious community he is a devout worshiper in the most popular church. If he is in a temperance community, he is the most zealous of total abstainers. If it is the opposite, then he has no objection to a social glass and a quiet game of cards. If one political party is in the ascendancy, then he is the most active partisan of that party. If political following is about equally divided, then Lord Rosse's telescope could not discover in him the faintest glimmer of a political belief. The children of the trustees and those of the great men of the community are his especial objects of solicitude. Their Johnnie dears and Susie darlings are infallible—they can do no wrong. But woe to the children of that poor unfortunate "whom unmerciful disaster has followed fast and followed faster." The friendless child of poverty has no rights that the pedagogic demagogue cares to respect.

The closing day of school is the season when this wandering star shines the brightest. Every pupil in the school, like a little hand-organ, has been wound up and set to a certain tune; and, at a turn of the crank by the teacher, grinds out its little stent of rote knowledge.

The listening parents wonder and wonder, "and still the wonder grows," that they can be the fathers and mothers of such juvenile philosophers. Poor deceived mortals! They have never discovered the trick of putting up examinations. They don't know the show has been prearranged and each part rehearsed.

The show over, and the parting hour comes. The pedagogic demagogue rises to speak his piece. In simulated tones of sadness, in choice phrases carefully conned beforehand and set thick with fulsome flattery, and sticky with sickish sweetness, he snuffles a tearful farewell to his beloved pupils and patrons. And the dearly beloved pupils, with agony contorting their forms and tears bedewing their freckled faces, clutch at his clammy digits in a very cyclone of sorrow at parting.

There is one device of this genus that I must notice before closing, and that I shall call the martyr role, or "the injured innocent dodge." If he—or she, for the genus is feminine as well as masculine—is an assistant teacher, and thinks he can add to his popularity or raise himself to a higher position by undermining his principal or superintendent, he assumes the martyr role. He begins by vaguely hinting that he is the victim of jealousy and persecution. His merits and abilities so overshadow those of somebody he might mention, that he is constantly subjected to a system of tyranny and oppression to put him in the back-

ground. If he succeeds in arousing the curiosity and awaking the sympathy of some intermeddling patron of the school, he unbosoms his grief and a tale unfolds of the many indignities heaped upon him by his superior officers. Soon the seeds of discord are sown. Dissensions arise. The school is divided against itself, and the pupils and patrons are arrayed in cliques. All the usefulness of the best teachers in the department is destroyed. The author of all the mischief may, on the ruin he has wrought, mount to power; but if he does his hold is uncertain, and sooner or later retribution overtakes him; but not until he has done a world of mischief.

Every teacher who resorts to the tricks of the demagogue to gain popularity merits the reprobation and contempt of every honest man and woman in the profession.

TIREB.

We are so tired, my heart and I.
Sweet is the swell of the poet's sigh;
Sweet is the ring of the minor chords;
Sweet is the chime of the measured
words!

But, oh! when life is hard and dull
We miss the joy of the beautiful,
And echo it back like a bitter cry—
"We are so tired, my heart and I."

Tired of sowing the barren grains,
Tired of taking the useless pains,
Of the futile faith, the unheeded word,
And the weary sickness of hope de-
ferred;

While the counted sands drop fast away
Through feverish night and restless day,
And the reeds we lean on break, one
by one,
And the sad, ungranted prayers go on.

The wind sweeps over the cowering plain,
Through the creeping mist sobs the cease-
less rain;

The chill and heaviness all around,
Like a chain the aching temples bound;
Dream, fancy, sacrifice—what is it all?
Climbing, struggling, slip and fall! [sky;
O'er the dull gray sea stoops the dull gray
We are so tired, my heart and I.

Break through the clouds, O Easter light!
Wake up, brave sense of truth and right,
Lay on the shrine of our risen Lord
The useless talent, the broken sword;
Lay there doubts, griefs, and wants and
cares,
And the erring darlings of many prayers.
From the cross on earth to the crown on
high,
Let us look together, my heart and I.

—[*All the Year Round.*]

"If there were to be any difference between a girl's education and a boy's, I should say that of the two the girl should be earlier led, as her intellect ripens faster, into deep and serious subjects; and that her range of literature should be, not more, but less frivolous, calculated to add the qualities of patience and seriousness to her natural poignancy of thought and quickness of wit, and also keep her in a lofty and pure element of thought. I enter not now into any question of choice of books; only be sure that her books are not heaped up in her lap as they fall out of the package of the circulating library, wet with the last and latest spray of the fountain of folly."

ORAL LESSONS IN LANGUAGE.

IN TWO PAPERS,—NUMBER ONE.

FIRST YEAR IN SCHOOL.

FOR language lessons for the first year in school, the objects with which children are already partially familiar furnish abundant material. A few conversational lessons, similar to that outlined above, to enable the teacher to study the children while the children learn how to go to school, may be followed by familiar talks about the objects in the school-room. As the chief use of these early lessons is to get the children to express what they know, the objects chosen should be such as they have seen elsewhere; as the table, the chair, the door, the windows, or the clock, rather than the blackboard, the crayon, or the desks. To name the object, to speak the name plainly, to tell where they have seen something like it before, to tell what it is for, to tell the color of it, and anything else they can about it, may be quite enough for one lesson. In general, without limiting freedom of expression, it is better to have a plan for the lesson, as:

1. The name of the object. Drill on the pronunciation of the name.
2. How many have seen any other or others like this. Where? A question which will elicit in answer the name (if not too difficult) of more than one.
3. What people have them for, or do with them, or of what use they are.
4. Color; very large or small; like or unlike others which they have seen; why others do not look like this.
5. Questions which elicit in answer the words of the lesson upon which they need to be drilled.
6. A simple home-task to cultivate perception and comparison; as, if the lesson has been about a chair, to look at the chair in which the baby is rocked to sleep, or the chair in which the little brother or sister sits at table, and tell about it to-morrow.

Cautions. 1. Avoid objects whose names the children could not articulate.

2. Avoid teaching or using many new words.

3. Use very simple and pure English. If a child errs in speech, either restate his fact without remark, or say, "Yes, that is true. I would say, . . ." putting it in better form. Or, agree with him as to the fact, and ask him or another to "tell it in a different way," or "in a better way." Let the child who made the error repeat what he said in the better form. Cordially approve the new statement. *Not merely to see that a thing is done, but to see that it is done in the best way*, is the indispensable office of the teacher. The child is not to be interrupted or contradicted. Without any spirit of censure, with tact, politeness, and gentleness, he is simply to be shown the right way.

4. The lessons should be brief. Twenty minutes would be too long, even for a class of forty children.

5. Choose unlike objects for consecutive lessons. Vary the plan pursued.

Two or three talks about objects with which the children are comparatively familiar may be followed by a few picture-lessons on domestic animals, or two or three lessons in distinguishing sounds, recognizing colors, and testing weights.

The following scheme of lessons will be suggestive to the teacher, and may be modified in any way which will adapt it to the needs of individual classes, provided it be remembered always that—

To educate the senses and cultivate perception is as great a service as to train the lips to speak. That,

To help the child acquire ideas is more valuable than to teach him to use words. That, *Pictures appeal to but one sense, and cultivate imagination rather than perception,* give erroneous ideas of relative size, and give no ideas of sound, weight, and other sensible qualities; and that picture lessons must therefore alternate constantly with lessons on *Sound, Color, Size, Weight, Form, Drawings, Minerals, Plants,* and manufactured objects.

To keep in view that in all these things *the child is a discoverer; that the eye, the ear, the hand, and the tongue are to be impartially trained;* it would be better not to think or to speak of these early lessons as *Language Lessons,* but as exercises in getting acquainted with things.

Color. Make a collection of bright-colored crewels, knots of silk, samples of ribbon, straws, bits of tissue paper, beads, feathers, and whatever will add interest or variety of application to the lessons. During the first year teach the children to recognize and name the prominent colors; as—

RED, GREEN, BROWN, YELLOW, VIOLET, WHITE, BLUE, ORANGE, BLACK.

Plan. 1. Place the materials of various colors before the class. Select two objects, as two blocks, straws, or feathers, which *differ in color but are alike in other respects.* Have the two objects named.

2. Hold up one of them and ask who will come to the table and find one *just like it.* Another. Another. In each case have the class agree that they are alike.

3. When all have been found, still ask them to find another. If they say there are no others, select one which differs in color only, and ask why that would not do. What color are these?

Who can find anything else on the table that is *red*? Repeat this until all the things that are red have been found. In each case have the child show the object to the class, and tell what he has found, and what color it is; as, "*I have found a bead.*" "*This feather is red.*"

5. Find something else in the room that is red; or, bring something to school to-morrow that is red.

Cautions. 1. When the objects are not in use it is better to keep them out of sight. *Novelty* furnishes half the interest of the lesson.

2. Each color should be represented in different material, and in various tints and shades.

3. If the children say "*light blue,*" "*dark green,*" etc., accept and use the terms; but do not attempt to teach them to distinguish or name the different tints, hues, and shades.

4. Take care to *place together the colors that harmonize;* as red with green, yellow with violet, and blue with orange.

5. Test every child in the class to discover if any be color-blind.

When one color has been learned, make on the blackboard a small square or other design in crayon of that color, and let it remain. After red, teach the class to recognize green. Review red and green together, and add the design in green crayon. Place elsewhere on the board the design in orange and blue, and in yellow and violet, when those colors have been learned.

After several colors have been taught, call upon the children to name a

flower, a fruit, a bird, or other absent object, and tell what color it is. To be sure that all the class are thinking of the same color, have the child who names the object point out something in the room that is of that color. If only a part of the object be of that color, as the breast or neck of the bird, or the center of the flower, have the child state what part is of the color chosen. If the thing named varies in color—as, roses red, white, yellow—lead the class to state that. When the children differ about the color of any object, let them look at it before the next lesson and report what color it is. The colors in a bouquet, in a picture, in the plumage of a duck or peacock, in the rainbow, or in the landscape seen from the school-room window, may be used as a lesson in review. The name of each color written over the color-square on the blackboard will be learned by the word-method before the close of the year.

Size. By the comparison of sticks, strings, lines, strips of paper, pieces of tape, and various other objects, lead the children to pronounce and use correctly,

- | | |
|--------------------------------------|---|
| 1. <i>Long and short,</i> | 4. <i>Short and shorter,</i> |
| 2. <i>Long and longer,</i> | 5. <i>Short, shorter, and shortest.</i> |
| 3. <i>Long, longer, and longest,</i> | |

Plan. 1. To develop the new idea and teach the word, present two objects, as two strings, which differ in length and are alike in every other particular. Have the class say what you have; how many you have; how many you put on the table; *which* string you put down, and how they can tell which it was when the two are together.

2. Apply the new word, or words, to lines on the blackboard and to the objects in the school-room.

3. Have them name things seen out of school that are *short; long*. Name two that are long, and tell which is the longer, etc.

Cautions. 1. *Teach the children to measure*, and not to guess, to find out which is longer or shorter.

2. Present new objects, and vary the tests given and the application required, in order to promote interest and to secure variety in the language used.

Take a few lessons on some other subject; as *Weight*, or *Sound*. Then review the above, and teach—

- | | |
|---|------------------------------|
| 6. <i>Broad and narrow,</i> | 7. <i>Broad and broader,</i> |
| 8. <i>Broad, broader, and broadest.</i> | |

Caution. If a child use a correct word, as *wide*, accredit it, and commend him. Ask who knows another word that means the same, and accept or teach *broad*.

9. *Two words* to describe the same thing; as, “a *long, narrow* brook,” “a *long, broad* street,” “a *short, narrow* lane,” “a *broad, short* aisle.”

- | | |
|---|--|
| 10. <i>Thick and thin,</i> | 11. <i>Thick, thicker, and thickest,</i> |
| 12. <i>Thin, thinner, and thinnest.</i> | |

13. *Two words* to describe the same thing; as, “a *short, thick* pencil,” “a *long, thin* board,” “a *broad, thin* ribbon.”

Caution. Aid the children to express themselves in full statements; as, *The stove-pipe is long. A piece of paper was wrapped around it. I have the thickest coat.*

NOTE.—If there be time, the teacher may add lessons on things that are *large, small, deep, high, tall, low. Shallow, slender*, and words as difficult as these should be deferred til much later.

WILD-CAT DISTRICT.

BY CHARLES M. DRAKE.

[Santa Barbara County.]

CHAPTER XVI.

“IT is your bounden duty to do it,” declared Mrs. Johnson, and when his wife spoke those words in that tone, the judge knew that it was useless to resist further.

“I suppose it ought to be done,” he groaned.

“Of course it ought to be done,” said his wife. “You are her guardian more than anyone else; and, as county superintendent, it is your duty to see to the morals of the teachers in your county, let alone your own home school district. I do n’t so much blame Mr. Dean, for a man don’t get hurt by being talked about, but Alpha Black has no business, in the first place, to live alone the way she does, and she ought to have known better than to stop twice a week after school to take music lessons, and”—

“But Willie White always staid and took his lesson at the same time,” pleaded the judge.

“What would he know whether courting was going on or not,” sniffed Mrs. Johnson. “A girl might have seen, but a boy—humph!” and Mrs. Johnson looked the utter contempt she could not express in words.

“He has surely seen enough courting going on ’twixt Silver and Miss Bell to tell what it is,” replied the judge.

“Now, do n’t you make a laugh of this, Mr. Johnson. It is a se-rious affair when a young girl sets at defiance the conventionalities of polite society. And the way she throws herself at John Dean’s head must sicken anybody with any modesty.”

“Now, wife, I never noticed she tried to catch the teacher. She was always sort of fighting him, rather. I do n’t believe she’d have him if he wanted her. Besides, she’s most too young for that sort of nonsense. And he is nigh old enough to be her—uncle.”

“She is a year older than I was when I married you,” retorted Mrs. Johnson. “And he is only eight or nine years older than she is. I tell you it don’t do for a man teacher to hardly look at a big-girl scholar out of school. Folks will talk about it.”

“But he is a very moral young man”—

“And you want to keep him so by talking to him,” interrupted his wife, “if talking to her wont do. The hussy! To tell you to watch out at home, for John Dean came here twice as often as to her door—and me a respectable married woman!”

“That was rather rough on you,” chuckled the judge. And he picked up his hat and cane and walked out, before his wife could recover her breath at his unusual audacity.

Arriving at John Dean's house, after a little preliminary conversation with the teacher, he somewhat awkwardly made known his errand.

John Dean listened to him in silence until he was done, and then said gravely: "While I do not deny your right to say what you have done, I cannot but think the good people of Wild-cat might find something better to talk about than that help which every teacher owes to his pupil, even if that pupil be a young lady. What are the facts here? I have given a girl of extraordinary talent for music two lessons a week, and always in the presence of another pupil. I have called at her door several times, as she is my nearest neighbor, to do her some unasked-for kindness that anyone might offer. As we both collect specimens of plants, shells, etc., it was unavoidable that we should occasionally meet while rambling over the hills or along the beach, and no more than courtesy that I should loan her a horse when her own was lame, and talk at times with her about the specimens we gathered. Now, I can see in all this nothing but the most harmless kind of friendship, such as any teacher might feel."

"Oh! nobody thinks any real harm, you know," said the judge, eagerly. "But people will talk about a young man and a girl, and she is so careless of what other people think."

"Have you ever spoken to her about this?" inquired John.

"Well, yes," admitted the judge, "just a little; but she flew up like I never saw her do before, and I tell you I do n't want to say any more to her. She gave me the worst lashing I ever got from a woman's tongue, for as few words as she used."

John remembered the power of Mrs. Johnson's tongue, and could not help thinking that the judge must have caught it, if Alpha's tongue was worse than Mrs. Johnson's.

"We all thought," continued the judge, "that you was going to marry Miss Bell, until we heard that she and Mr. Silver were engaged, and when folks found the wind did n't blow in that quarter, they began looking at other points of the compass."

"I cannot see," said John, coolly, "why it should be thought necessary for the people to hunt around after some one to marry me to; nor do I see why people cannot recognize that friendly intimacy may exist between young people of different sexes without a desire for marriage arising. In country places, if a young man goes with a young lady three or four times, people begin to talk and joke about marriage, and couples are often driven together by public talk, who would never have dreamed of marrying if left to themselves."

"I thought it my duty," said the judge, rising and preparing to go, "to give you a friendly hint about the matter, so that you might know how—a—a girl's character, you know, is so much more easily hurt than a man's."

"It should not be," replied John. "There is no sense in blaming the woman nine-tenths and the man one-tenth for what is generally the fault of the man entirely. To say that a woman cannot do without disgrace what any man is allowed to do without blame, savors too strongly of barbarism, I think."

After the judge had left, John sat for some time considering what was best to do. He could not disguise to himself that he had been strongly attracted toward Alpha Black for the past few months. She had advanced so rapidly in her studies; the old hoydenish manners had given place to a womanly earnestness and gentle ways. She was daily becoming more beautiful, and her singing was a great delight to John, who had been giving her music lessons for the past nine months. These music lessons had caused the growth of tender feelings in both their hearts, for many of the duets they had learned were love songs, and constant simulation of any passion leads to the actual growth of that passion. Alpha's lonely condition appealed to him for that protection which man delights to afford to those weaker than himself; and though she made her money by out-of-doors work, John saw that her house and her clothes were always neat and clean. And how was it with Alpha? She had found in John her first real friend in Wild-cat—the first who had understood her thoughts and sympathized in her pursuits. She could not help seeing that physically, mentally, and morally he was far above those she had heretofore known, and the unvarying kindness with which he had treated her, and the thoughtful help that he had often given her, had won her heart before she was aware of it. True, John Dean was considerably the older, but age is not always to be counted by years, and women get old much more quickly than men. Yet, such is the perversity of woman's nature, that she delighted to show him the most annoying side, and she tried to conceal her real feelings under a feigned coolness, which left John a little in doubt, though he felt that she knew of the growing affection he had for her.

"Shall I be happier married or single?" queried John. "I am making enough money, so that I could well afford to marry if marriage would make me happier. I should be more bound down to home, but perhaps that home might be pleasanter. I should have less work to do in the house, but would things there suit me as well? We should have to bear with and smooth down each other's peculiarities, but perhaps each would be the gainer thereby. After all, the main question is, could I keep on liking her as well or better as we both grow older? She needs some one to take care of her, and she is not burdened with disagreeable relations. I don't think I should like to marry a whole family unless I could like them all, and here there would be no one to meddle with us and our ways."

"Us and ours!" It is this which forms the strongest part of many a bond of union. Men work for "our party," "our religion," "our customs," "our country"—aye, they will fight and die for them, and yet be unable to tell what they are, and why their way is right and the other wrong. So in married life: because it is my *wife* or my *husband*, faults are overlooked, or we allow none but ourselves to grumble at them. Us-ness strengthens love, beautifies plainness, magnifies virtue, and enlarges worth.

Yet, John Dean did not require the glamour of love to make him admire Alpha, for he had really been forced into admiration against, as he thought it, his better judgment. John had always thought of women as tender beings, incapable of severe exertion, yet here was a girl who thought nothing of walking

twenty miles in a day. He had thought all women were slaves to the looking-glass, but Alpha showed her disregard of such vanity by cutting short a beautiful head of hair, because she felt healthier that way; and she never crowded her feet into those machines of civilized torture "called ladies' shoes," or tried to squeeze a healthily rounded waist into barbarous corsets or ugly tight-fitting dresses. She would as soon have thought of boring holes through her lips or her nose, into which to insert golden ornaments, as of putting them into her ears; and she regarded a healthy brown color as much more desirable than the sickly white, admired by a silly fashion. She was remarkable for the straight-forward open truthfulness of her speech; for the course of man in past time has ever been such, that women were forced to gain their ends by cunning and deceit; and a frank, truthful girl is much more hard to find than a boy who does not lie. Women are more innocent than men, because they are exposed to less temptation, and their failings are visited more surely and severely with bitter punishment; but man ever leads the way to each higher plane of morality.

After thinking it all over carefully, John Dean made up his mind to marry Alpha Black; and during the next two months he set to work to win her for his wife. Of course he prospered in his wooing, for every advantage was on his side; and when a man, suitable in every way to become the husband of a young girl, really tries to marry her, he seldom need to fail.

Yet, all was done so quietly that the Wild-cat people suspected nothing of the kind when they gathered Thanksgiving afternoon to attend the wedding of Ernest Silver and Carrie Bell. This marriage made the good people shake their heads most dubiously, for the bride and groom, when the appointed time arrived, merely arose and declared their intention to live together as man and wife, and Mr. White then declared them married. A contract had been signed by both, declaring that all property held by each at the time of marriage should continue their individual property, and that all property gained after marriage should belong to each equally, and at the death of one should revert wholly to the other. After this had been duly read, witnessed, and commented upon, John Dean and Alpha arose and went through the same simple ceremony of marriage, before the people could recover from their astonishment. Their contract declared that not only should the property held by each remain their individual property, but that the future separate earnings of each should also be separate property, and that all joint earnings should be equally divided, and joint expenses be paid by both.

"I should just think I was n't married at all," said Mrs. Brown to Mrs. Johnson, "if I did n't have a preacher to marry me. And to think of married folks keeping separate purses! Though I always did hate to ask Mr. Brown for money."

"They have both of them done very well—those two girls," solemnly replied Mrs. Johnson. "They have married good homes, and men who are able to support them in comfort; and I do hope, now Alpha Black has found her master, she will be like other folks."

Thus it is that too many of our girls are taught. They must marry houses and make them into homes; they must submit conscience and all to the mas-

ter man, and avoid those individualities which make them unlike other folks.

Can we not, as teachers, do something to better this? Cannot occasional talks upon the true relation of man and wife be introduced into the school-room? Those who are slaves often have no desire for freedom, but that does not excuse the crime of slavery.

So it is with woman. She wants not the ballot, for she never felt its power. She desires not equality before the law, for slavery has blinded her eyes. She looks helplessly to the man for support, and sacrifices her self-respect every time she asks him for money. These and other faults of our social system can be best attacked by appealing to the young, whose minds are yet unbiased by the trammels of custom, and free from the dictates of fashion.

In writing these few and almost disconnected chapters of life in Wild-cat district, the writer has not aimed to more than hint at ways and methods of teaching. The circumstances surrounding each school differ widely, and the methods which one teacher uses with success prove faulty in the hands of another. Yet there are true methods, and we should try to find what they are, and use them as best we can.

The every-day life of teachers in country districts need not be dull, for they are full of opportunities. Country children are generally more intelligent than city children; they can do better and more work, and are more likely to become useful to the world. Parents, too, as well as children, can be instructed and elevated by the really competent teacher.

You have in the country a better chance to save money, to study, to keep healthy, and to take rational enjoyments of many kinds. Then, why will you ever crowd to the cities to be overworked and underpaid; to lose health and waste money and time upon useless and vain fashions?

Make yourself a home in some desirable place, and make yourself so useful to the people, old and young, that they will never willingly part with you. And if you want to take a pleasant trip some vacation, go to Santos County and to Wild-cat district, and visit John Dean and his wife Alpha. They will be glad to see you.

END.

Good schools are not always kept in costly school-houses; do not always have good apparatus; are not always the stillest; are not always the most praised; do not necessarily get newspaper puffs, or get up show examinations or exhibitions.

“ON the whole, for future learning and work, for knowledge and capacity, for the power of practical apprehension, and of forcible and well-illustrated exposition, for moral as well as mental vigor, the teacher must bear in mind, that the cultivation of the *logical* intelligence should be postponed to that of the *conceptive*.”—*Currie*.

ARITHMETIC—SUGGESTIONS TO TEACHERS.*

BY MALCOLM MACVICAR, PH.D., LL.D.

THE following propositions apply equally to every stage of the teacher's work, and indicate the *general method* which he should pursue, both as regards himself and his pupils; hence they should be carefully studied, and fixed clearly in the mind.

I.—Let the work of each day be prepared as follows:

1. Master so thoroughly the lesson assigned to the pupils that you can dispense with the use of the text-book in the recitation, except when dictating examples for the pupils to solve. *Observe*, this involves,

(a) Holding *all the facts* in the lesson in the mind as a *unit*.

(b) Perfect familiarity with the connection the lesson sustains to the pupil's previous work, and its bearing on his advanced work.

2. Notice carefully the *root thoughts* or important points in the lesson around which *details* are naturally grouped. *Emphasize thoroughly* these points in your teaching.

3. Select with great care all the points in the lesson that need illustration, and prepare a method of presenting each of these points before attempting to teach them.

Observe, that to be successful in explaining difficult points,

(a) Your illustrations must be simple and familiar, yet striking and varied.

(b) You must use small numbers which the pupils can hold in their minds without such an effort as will distract their attention from the point illustrated.

(c) You must present *each step* in your illustration *separately*, and in its logical order.

II.—Let the work in each recitation be *systematic*, *definite*, and *pointed*, and let it be performed in a *spirited* manner.

To secure this result, the following must be observed:

1. Mark out for yourself a general plan for conducting class exercises, and adhere to it, subject to such modifications as the conditions and surroundings of your class may necessarily demand.

Such a plan should include at least the following:

(a) A method of disposing, without interrupting your work, of questions or order that may arise during the recitation.

(b) A definite time for pupils to present the difficulties they may have met in studying the lessons assigned to them.

(c) A time and method for illustrating the pupil's difficulties.

(d) A method of rapidly and correctly testing each pupil's knowledge of the work assigned.

(e) A systematic plan for blackboard work, including order in going to and from the board, position at the board, form in which the work should be put on the board, and a method of correcting the work when finished.

(f) A time and plan for oral exercises, and for written exercises upon the slate.

2. Hold your pupils rigidly, in class exercises, to the work assigned. Let no side or useless details divert your own or the pupil's attention from the real subject under discussion. This involves the following:

(a) The work assigned in each advanced lesson includes, without being stated, an explanation, when required, of any point previously discussed.

(b) Explanations of difficulties, either by the teacher or pupils, are class exercises; hence, each pupil should be held responsible to reproduce such explanations at any time after they are given.

(c) While the strongest encouragement and fullest liberty should be given to the pupils at the proper time, and under proper restrictions, to ask questions on the point under discussion, all useless and trifling questions, and such as do not have direct reference to the subject, should be absolutely excluded.

III.—Let special attention be given to each of the following points:

1. *The pupil's use of language.*

(a) Do not allow the pupil to use contracted statements or forms of expression that are grammatically or otherwise incorrect.

(b) Encourage him, by suggestions, to use a variety of words to express the same thought; also, to observe closely the special meaning of business terms and expressions.

2. *Practice in making well-formed figures.*

(a) In primary classes constant practice should be given in making figures, both on the slates and blackboard. The pupil should be required to imitate closely the script and roman figures. Each exercise should be copied neatly on the slates, and the teacher should carefully examine the work, and commend what is well done.

(b) In more advanced classes, exercises should be given frequently in writing on paper the solutions of examples. This will give practice in making figures and in arranging the work in neat form.

3. *The arrangement of work on the slate, blackboard, or paper.*

(a) When a new subject is commenced, illustrate on the blackboard the way in which the work may be written, and insist that each pupil place his work on the board, slate, or paper, at all times, in a systematic and neat form.

(b) Let the pupil's work on the blackboard or slate be always carefully noticed. Commend what is well done, and require what is not well done to be rewritten.

4. *The oral and written solution of examples.*

- (a) Avoid stereotype forms. Encourage originality in the method of analysis and solution.
- (b) Insist upon both accuracy and expertness. To secure these results, exercise the pupil frequently upon abstract numbers and simple examples which he can solve readily, holding him to doing the work in a given time.
- (c) Insist, when reading examples for solution, that the pupils follow you so closely that short ones need never be read more than once. Insist, also, that no book be used when a pupil is explaining an example on the blackboard.

IV.—In solving examples, let the pupil be required in every case to master the thought before attempting the solution. Let him also, in wording his analysis or solution, be required to guard carefully against the use of set forms of expression.

In carrying out the requirements of this proposition, observe the following:

1. To master the thought in an example, let it be read with great care, thus:
 - (a) Determine the exact meaning of each technical term used.
 - (b) Locate clearly in the mind the nature of the transaction, and the relations of the parties concerned, or the peculiar conditions stated.
 - (c) Examine carefully the quantities or numbers given, and notice, from the nature of the transaction, the relations of these quantities through which the required results can be determined.
2. In giving either an oral or written solution of an example, the pupil should be required to state:
 - (a) What is given and what is required.
 - (b) The relations of the given quantities from which what is required can be found.
 - (c) The steps that must be taken in their order, and the process that must be used to obtain the required result.

In making these three statements, *clearness*, *accuracy*, and *brevity* should be the *only conditions* imposed.

TEACHERS who allow their ideas of teaching and governing to be subordinate to the will of the people, are about as wise as horsemen who allow ugly animals to run with them as they please. What has a teacher to do with the crude ignorance of uneducated sisters, cousins, and aunts in this work? He may listen to them in long and respectful silence, but, unless he has independence enough to go his own way and act his own pleasure, he has no right to teach. If ancient maiden aunts wish to direct the education of their fond relations, let them seek and obtain positions in the schools; otherwise, let them forever hold their peace. Only quack teachers and doctors consult their patrons before giving advice. The god-like intelligence of a little common sense is capital evidence of fitness for a school-teacher.

MORE OF YE ANCIENT PEDAGOGUE.

BY SUPT. O. S. INGHAM.

[Alameda, Cal.]

BUT if "ye ancient pedagogue" was not always remarkable for book-learning or ability to teach, he was ingenious in suppressing the spirit of rebellion. When a mere child, an overmastering curiosity often led me to test his ability to eradicate juvenile rascality, usually to the prompt and complete satisfaction of said curiosity. On these interesting occasions I was sometimes "tricked out" by the morbid taste of "ye pedagogue" with the most striking and singular devices. My auburn locks were carefully shrouded in a fool's-cap; each ear was ornamented with a split goose-quill; another split goose-quill was attached to the end of my tongue; another was applied to my nose—all the above specified members thus sharing a common grief.

Sometimes I was permitted to stand on the floor and to hold my arms straight out from the body, my hand grasping a rule held horizontally, on the opposite end of which rested a book. That was tiresome. One kind of gymnastic performance in which I engaged, under the supervision of the teacher, and which secured me some local reputation, consisted in assuming a frog-like attitude, and reaching out to touch with my index finger a particular spot on the floor. Then, when with every muscle strained, and my body the segment of a circle, and as my young ambition was about to be gratified, I experienced the most remarkable emotions. At that critical juncture an unexpected assault on an unprotected quarter, lifting me two feet from the floor, with a whoop creditable to the noble red man, disturbed my plans and docked my approaching triumph.

Sometimes the pedagogue manifested his partiality for me by inviting me into the middle of the room, when he beat time for me, and I danced vigorously, if not gracefully, and furnished my own music, which was, perhaps, more remarkable for volume than sweetness.

One of my first teachers was an older sister. Her great besetting weakness was the fear that she would be suspected of showing partiality to her little brother. Some totally depraved pupils, knowing this fatal weakness of my sister, forged scandalous tales about me, to fan the spirit of persecution, until, at last, it came to pass that I could not, undisturbed, engage a pupil during school hours in the manly art of self-defense, cut a pigeon-wing, or engage in any other little innocent amusement. Those trying scenes are impressed the more vividly on my memory because it was summer time, my pants were tight and the cloth thin.

Another teacher "kept our school" three or four terms. He had straight, bristling hair, eyes all around his head, was very nimble, and could "cipher all through the book," it was said. He made it lively for us. When a boy became too warm, he would open the door, seize the boy and pitch him into the nearest snow-bank. That "cooled off" the boy. He handled Daboll's Arith-

metic as few teachers could. One day he brought that standard work so suddenly and with such effect against the side of my unmathematical head as to split both covers from the book, and to put an exceedingly "lively flea" in my ear.

Another of "ye pedagogues," whom I well recollect, was remarkable for the originality of his vocabulary. He would startle his pupils by announcing his intention to "take off their hides," asserting at the same time that if he did not, he "hoped to squeal," or "to scratch gravel." Before the term closed, the boys and girls, without exception, had mastered this unique and expressive vocabulary, and were fully ready, one and all, "to squeal" or "scratch gravel," in certain pressing contingencies.

I am fortunate in being able to furnish the profession, before closing the list, with a sketch of the prince of prehistoric pedagogues. In the primeval times when lived, flourished, and died the genuine, undiluted, undeteriorated species referred to, in nearly every rural school district were sires, matrons, uncles or aunts, brothers or sisters, cousins, or somebody else, who had relatives, at whose birth the genius of pedagogy presided. It so happened that in our district dwelt a cobbler, the proud head of an interesting family, whose spouse—the happy mother—had a wonderful kinsman, an intellectual luminary. The cobbler, in the spirit of unselfish philanthropy, communicated the important fact to the school board, who immediately decided to secure the light of this luminary to shine upon our benighted district, offering the munificent sum of eleven dollars per month and board, to secure the sole and undisputed monopoly of his shining for the space of three months. The kinsman came. The day after his arrival and a day or two before the kinsman was to open the flood-gates of light on this fortunate district, the cobbler caused the neighbors to stare by stating that the kinsman was so loaded with books when he arrived that they mistook him for a book-peddler. It was afterward ascertained that he had tied up in his handkerchief seven books, the most important of which was an old copy of Ostrander's Arithmetic.

The fame of the kinsman spread through the district, and on the memorable first day of school the pupils breathlessly entered the school-room, oppressed with feelings of awe and veneration. One glance at the kinsman, and every other feeling gave way to astonishment. He was tall, gaunt, and bony. Any further extension of his legs would have compelled an entire omission of body. These legs were uniform in size, with the exception of knotty prominences where the knees are usually located. His feet were covered with cowhides, the maker's profits on which must have been trifling, unless the contract was based on square measure. The legs at their upper termination united and ramified into a hollow-chested, concavo-convex, patternless body, perched upon which was a head calculated to drive a phrenologist to despair. His nose resembled an inverted butcher's cleaver. On each side of the cleaver was a depression, in which calmly reposed a drab-colored eye. His eyebrows were placed at right angles with the cleaver. His mouth was an open witness of Nature's munificence. His lower jaw resembled the working-beam of a steam-engine. He loved "the weed." From the corners of his picturesque mouth

tiny chocolate-colored rills flowed down each side of his chin. He had some skull to accommodate his locks, flowing free and unkempt. With elbows resting on the desk, hands clasping his classic head, his jaws, slowly, measuredly grinding "the weed," and gazing dreamingly over his little flock, he would sit hour after hour.

At the end of six weeks the school board extinguished the luminary, to prevent the whole school from being sun-struck.

But pleasant is it by contrast to turn from the contemplation of the forbidding countenance of "ye ancient pedagogue," gazing gloomily, unattractively, dimly down from the pictured hall of memory, to one whose brightness and cheeriness lights up and softens the chill, dreary obscurity about it; a face fair, alluring, and self-radiant from the light and warmth of the soul within; a face which, seen through the shifting scenes of the vistaed years, ever remains the same—calm, loving, beautiful—encircled with an aureole of mellow, celestial glory. Noble-minded, pure-souled, large-hearted, devoted, faithful, loving teacher! Though for long years the grass has grown green above thy moldering form, thy living example, thy word of advice and encouragement, thy patient labor, thy kindly sympathy, and quiet, winning ways will ever be gratefully remembered and lovingly cherished by those who have, by thy timely counsel, correct teaching, and ennobling influence, been made better, truer, nobler men and women.

DEJECTION.

BY GEO. GOSSMAN, A. M.

[From the German of Heine.]

HAVE I not told thee often,
Thou maid with piercing eyes,
Those eyes at length would bind me
With their bewitching ties?

And since they have succeeded,
I'd fain confess to thee—

But then, alas! their presence
Is sure to silence me.

Then some unfriendly angel
Doth steal my words away.

It is of this unkindness
I'm pining so to-day.

BREVITY is the best recommendation of a speech, not only in the case of a senator, but in that, too, of an orator.—*Cicero*.

THE charities that soothe, and heal, and bless, are scattered at the feet of a man like flowers.—*Wordsworth*.

IF anger is not restrained, it is frequently more hurtful to one than the injury that provokes it.—*Seneca*.

JACK'S CANARY-BIRD.

BY CLARA G. DOLLIVER.

[San Francisco, Cal.]

JACK'S mother was a big, raw-boned woman, with a bright, kindly blue eye, and one of the warmest hearts that ever beat; she also had what is popularly called a long tongue; it was certainly a remarkably active one, and when once started, would spin on like a clock, until it ran down.

Miss Kitiwake made her a flying visit one morning, and, in a rash moment, admired the golden-yellow canary which was pouring its heart out in song at the open window.

"Yes, marm, he's considered a splendid singer!" said Mrs. Jack, wound up to the notch in a moment. "He never screams; I can't bear a screaming singer, can you? When we're talking, he's just as careful not to disturb us as if he was a human; and all the time he keeps trilling softly, like as if he was so happy he could n't keep in. And you ought to hear him when my Jack's whistling down stairs; he'll whistle too, exactly like him, stopping every few minutes to call out 'peep!' and make sure Jack hears him. He's so cunning, some people say he could be taught tricks, but mercy on us! we would n't for the world shut our Toby up in a dark room, and make his little happy life miserable, because he will not sit on a pistol when it's fired off, or work in harness like a horse, which I'm sure I would n't do myself. He was under training when Jack got him, and odd enough it was too, and if you will come in out of the draught, Miss Kitiwake, I'll tell you all about it, for I often say to Jack it was the queerest Monday—that's right, sit down!" she added, seeing her hearer resign herself to her fate. "Well, it was wash-day, and an extra big wash, I had, and dreadful bad luck, too, for down went my lines when I had all my best pieces out, and I had to take 'em all in and rinse 'em over; and just then, home comes Jack from school, cheeks as red as roses, and face all smiles and good-humor, which that boy has been a perfect comfort to me since his poor, dear father was no more. The minute I saw him I felt better, and told him right off what had happened, and I had n't any hot dinner for him that day; and what does he do but take a bit of dry bread and butter, and a drink of cold water from the well, and start right in to help, putting up the line good and strong, and wringing out, and hanging up, so that everything was all as good as new by the time he had to start for school. So he kissed me good-by, which he always does even to this day, and went off whistling, and I tell you my heart went up until it was as light as a feather, and I thanked God"— Here Mrs. Jack stopped to choke down something in her throat, and wipe something from her eyes. "But things were bound to go crooked that day, for soon after he'd gone, as I was lifting a biler full of clothes off the stove, I gave the old funnel a hit, and down it came. It was a wonder the soot did n't fall into my clean clothes, but it did n't; it all went on the floor, and the fire was down, so it was n't so bad as it might have been; but it was bad

enough, for I had to change my dress, and run after the tinman across the street, and pay him, too, for putting it up, for all I was as poor as Job's turkey, as you might know from my washing, for I always did hate to wash, and when Jack's father was alive, and earning good wages, I always hired it out. How-somedever, it was up at last, and I went to work to wash up the floor, which was a sight awful to see, and when Jack came home, I was still down on my marrow-bones scrubbing.

'Oh golly!' says he, 'I'm as hungry as a bear.'

Now I knew there war n't a thing in the closet, but some cold beans, that I'd been unlucky with, and got too salt, and when it all came over me, what a good boy he'd been, and so hungry, and I with neither money nor provisions, and two tubs of clothes to hang out, and so tired, I just gave up, and bust right out crying.

'Why, mother!' says Jack. 'Why, mother!' And that was all he could say; he was just dumbfounded to see me crying, and could n't do nothing but wipe off the tears, and kiss me, and say 'Why, mother! do n't cry!'

As soon as I could get words, I told him what the trouble was, and he just laughed, and says he, 'Is *that* all? I thought something awful had happened. Now I'll hang out the clothes while you finish the floor, and as for eating, a loaf of bread'll do me, that we'll buy at the grocery, and a plate of nice cold beans and vinegar.'

He looked so funny when he called the beans nice, that I could n't help laughing, and that seemed to do me good; and I thanked God again that he had given me such a dear boy.

When he had almost all the pieces out, the fire-bells rang. 'Oh dear!' says I, being inclined to look on the dark side just then, 'are we going to be burned out? Run out and see where it is, Jacky. I know it is near by, from the sound.'

'Do n't be frightened, mother;' says he cheerfully, but looking kind of pale like, 'there's somebody up there,' and he pointed to the sky, 'that will take care of *us*.'

With that, he seized his hat, and was off, and it was a good three hours before I saw him again; at which I fretted a bit, because I was dreadfully afraid that he was hurt if he was out of my sight very long at a time; and a fire *is* such a dangerous place for a boy to be at, though my Jack is the cautiouslest of boys, as his father was before him, and as I am myself, so no wonder.

Well, after I was worried pretty near to death, home he comes; face as black as ink, and hair, eye-brows, and clothes scorched; and in his hand was a cage, and in that cage was Toby; not this one, bless your heart, no! It was a wooden Chinese thing, and all banged and broken up.

'For pity's sake!' says I, in a kind of a squeal, for what with fear and being so astonished, I did n't hardly know what I was about.

Upon that Toby put his head on one side, and looked up with his bright eyes, and says he 'Peep?' as much as if he said, 'hello!'

And says I, 'Why, bless your little heart!' for I was quite taken, it sounded so sweet and cheerful. And says Jack, 'It's a present to you, mother, to make

things pleasant for you washing-days.' Upon that, I just caught him, all black and smutty as he was, right in my arms and kissed him half-a-dozen times.

Of course, I would n't take his offer, dear boy, and I've called Toby 'Jack's canary-bird' always; and he, for his part, has always called it 'mother's canary-bird,' and so we are equabble, just as his father and I equabbled before him. He wanted to talk, but I would n't let him say a word, until I had his face washed, his hair fixed, and some clean clothes on him; then we sat down to the table, for I had tea all made, with Toby on the chair by his side, and he told me his adventures, slurring over all his own bravery and the like of that, for fear it might seem like bragging; bless his heart! but the tinman's son happened to be there, and he gave me *his* account of it, when he come to fix the stove-funnel again, which was n't half fixed by his father, that I suspected at the time had been taking more than one glass of beer. You see this was how it was. The house that was burning was a fine two-story one, four blocks from us, so I need n't have been scared; and the man that owned it had money in mining stocks and all that, and was pretty well off; among other things he had Toby; when he was a boy he had learned how to train birds, and as this one was bright and healthy, he was trying to train him, and what the poor little thing was suffering, mercy only knows, I don't.

Well, it seems that when my Jack got to the house, the firemen had quite given up trying to get out any more things, and the stairs were burned, and the roof catching. Suddenly a woman screams out, 'Oh my baby! Up stairs!' and fainted right dead away. 'No use!' says the firemen; 'ladder wo n't hold none of us,' and they looked around, and shook their heads at the people that begged them to try.

Then up steps my Jack; and says he, 'I'll go up.' At first, they said it was too risky, but they looked at the poor mother lying there white and cold, and the women around sobbing and begging, and says one, 'Let him try.' Jack said it war n't so very bad, only for the smoke, but he crawled on his hands and knees to get all the air he could, and went into every room, but the child was n't there; only in one room he found Toby, that was flying round his cage, and piping out that pitiful as if he knew his danger; Jack's heart was as tender as a girl's, and is to this day, though you might not think it from his great rough ways, and so he took the cage and crept back to the window, the smoke getting worse with every step. When he got on to the ladder, he put the ring of the cage between his teeth, and got down somehow. When he reached the ground, he says to the fireman, 'I hunted in every room, but I could n't find the child.' Then the mother pressed up, with the boy in her arms. 'His father had him!' she cried, 'I did n't know it.'

'Here's your bird, ma'am,' says Jack, feeling kinder bitter to think of all he had risked for nothing.

'Keep him!' says she, "You're a good, brave boy, and Toby's a nice bird.'

So that is how it happened, and if I live to my dying day, which I'm as like to do as anybody, I never will forget that Monday, nor the oddness of it!"

"Good morning!" said Miss Kitiwake in an exhausted tone, as she slipped out of the door; and poor Mrs. Jack not being yet run down, had to talk to herself and Toby for fully an hour after.

THE C. L. S. C.

This department is under the editorial charge of Miss L. M. WASHBURN, San Jose, to whom all communications relating thereto must be addressed.

EDUCATION AND ETHICS IN THE KITCHEN.

BY MARY E. B. NORTON.

THE well-ordered home is doubtless the best "cooking-school" for the training of the daughters of our land in the noblest of household arts.

We can but rejoice, however, that young women of wealth and leisure are giving it a place with other fine arts in their education, and thus sustaining the cooking-schools of eastern cities.

The table is the center of home, around which cluster the refinements, the hospitalities, and amenities of life.

Above all, it is a controlling force in the physical, if not the moral well-being of the race. Sour bread, badly cooked meats, and muddy coffee may not only produce dyspepsia, but may drive men to the club and saloon.

How many weary business and laboring men, who cannot relish their food, are tempted to supplement the poor meal with the glass of strong drink.

Our Thanksgiving and other holiday dinners often promote the same evil by opposite means. A multitude of highly seasoned dishes induces not only intemperance in eating, but, with the social wine-cup, brandy-seasoned pies, and wine jellies, often arouses appetites partially subdued, or stimulates those which inheritance and habit have formed.

When the teaching of our schools upon chemistry, physics, and hygiene becomes so practical and impressive as to be constantly applied to daily and home life, and to order and control the food of the race, one, at least, of the fortresses of that giant enemy 'Intemperance will have been stormed and taken.

EDUCATIONAL GLEANINGS.

[From the Scrap-Book of a Teacher.]

It is a belief in the Bible, the fruits of deep meditation, which has served me as a guide of my moral and literary life. I have found it a capital safely invested and richly productive of interest.—*Goethe*.

It is the work of fancy to enlarge, but of judgment to shorten and contract; and therefore this must be as far above the other as judgment is a greater and nobler faculty than fancy or imagination.—*South*.

ALL the good things of this world are no further good to us than they are of use; and, whatever we may heap up to give to others, we enjoy only as much as we can use, and no more.—*D. Defoe.*

THOSE passionate persons who carry their hearts in their mouths are rather to be pitied than feared; their threatenings serving no other purpose than to forearm him that is threatened.—*S. Fuller.*

NEXT in importance to freedom and justice is popular education, without which neither justice nor freedom can be permanently maintained.—*James A. Garfield.*

THE brightest crowns that are worn in heaven have been tried, and smelted, and polished, and glorified through the furnace of affliction.—*E. H. Chapin.*

I THINK the first virtue is to restrain the tongue: he approaches nearest to the gods who knows how to be silent, even though he is in the right.—*Cato.*

EVERY good picture is the best of sermons and lectures. The sense informs the soul. Whatever you have, have beauty.—*Sidney Smith.*

NOTHING is so wholesome, nothing does so much for people's good, as a little interchange of the small coin of benevolence.—*Ruffini.*

THE worst education that teaches self-denial is better than the best that teaches everything else and not that.—*John Sterling.*

HE submits himself to be seen through a microscope, who suffers himself to be caught in a fit of passion.—*J. C. Lavater.*

MAN has not yet learned to enjoy the world he lives in; no, not the hundred-thousand-millionth part of it.—*Leigh Hunt.*

EDITORIAL DEPARTMENT.

ENDS VOLUME IV.

WITH this December issue the PACIFIC SCHOOL AND HOME JOURNAL closes the fourth year of its existence. The year goes out, as it came in, with piercing winds and furious tempests. But the storm without bodes no discomfort or harm to those within. Thanks to the watchful Providence, who is ever ready to reward honest effort, the clouds which encompassed our enterprise when 1880 opened on the world, have drifted wide apart, and the sun of a brighter, more prosperous era sends his vivifying rays on our work.

With these hopes and prospects before us, it may not be amiss, before we speak of the future, to cast a brief glance over the struggles and trials of four years; to tell our schoolmen and those interested in the work of educating our youth, what it has been to organize and conduct an educational journal, devoted wholly and unselfishly to the best interests of the rising generations.

Four years ago we entered this field with little capital and much faith. We knew teachers on the Pacific Coast were, on the whole, intelligent, faithful, energetic, and best of all, handsomely remunerated. We considered it established that, among the many educational agencies to improve methods of teaching, to increase the general efficiency of school work, there was none more valuable than a good educational journal. We believed that such a periodical, sufficiently technical to be of actual service in the school-room, and yet containing enough general literature to add the charm of variety to its pages, would attract and interest every teacher who reads at all. On this plan and with these expectations we sent out the first number of the JOURNAL.

Our experience has been varied; our success not uniformly gratifying. For the first three or four months the responses to our appeal for support were few, and included only the names of the leaders in the profession, men who really needed no educational journal to aid them in their vocation. For the first year the work was steadily up-hill. The second came and passed, and while there was much reason for encouragement, no substantial return was received for our efforts. The third year was full of excitement, danger, and discouragement. The country was suddenly plunged into deep business depression. An exciting election came on, involving a radical change in the organic law of the commonwealth. This was soon followed by another, making a change in the political complexion of the State government. Together with every other business undertaking, the JOURNAL suffered from these depressing influences. So our third year ended with a large subscription list, a considerable amount due us from various parts of the State, and comparatively little money coming in to pay our own obligations. This was the time when we almost gave up the fight. But here, fortunately for us, the new Constitution, as we had predicted months before, even while strenuously opposing it, came to our aid. One of its most pernicious school sections directed the abolition of State uniformity of text-books and their adoption by counties.

Now commenced the struggle of rival book-houses. The advertising columns of the JOURNAL were in demand, and we profited, though the people practically paid the bills.

About the middle of the year the State Board of Education, acting under authority of the School Law, designated our publication as the official organ of the Department of Public Instruction, thereby insuring its subscription for every school district in the State. If this action is made permanent, as we hope and expect, the JOURNAL may be considered as having passed through its period of trial and tribulation, and entered on a career of active usefulness. Even with this aid, however, several dangers menace us. The greatest is that teachers will withdraw that cheerful help which in the past has been our support. We must reiterate what we have often said before: The JOURNAL can be made successful only by the continued and hearty co-operation of the teachers of the State. If it is to continue in existence, it must be through them and by their aid.

For the coming year the publishers have effected arrangements which will fully carry out the plan on which our enterprise was conceived. Our next number will contain announcements of articles and names of contributors. This year we announce such articles only as have been actually secured, not promised. We find, on looking over the prospectus for 1880, that some articles then promised, were never furnished by the authors.

As soon as the large amount still due us for subscriptions are paid in, the JOURNAL will be increased to forty-eight pages, including a department for Friday afternoon exercises, and one page of music. These improvements depend on the

prompt payment of all outstanding dues, and the encouragement given by a ready renewal of subscriptions at the beginning of next year. We have suffered considerable embarrassment and some loss in following the usual policy of educational publications, by continuing to send our periodical after the time has expired for which payment was originally made. In this we were nominally protected by the Postal Law, which provides that a publisher may continue to send his periodical until *it is ordered discontinued and all arrearages paid*. We have concluded to abandon this policy, however; and in the future the JOURNAL will be sent for the time only for which prepayment is made. This is sound business policy, and will commend itself to all who would be pleased to see a strong, useful educational journal live in this field.

In closing our fourth year's work, we take leave of our large audience with every feeling of esteem and affection. We owe them many kindnesses, which we have endeavored to repay by unwavering devotion and unceasing activity in behalf of the educational advancement of the State.

We trust that the month of December will bring us evidences of their continued regard; and that when Volume V begins its career, we may be able to give assurance that our JOURNAL is stronger and better than ever before.

IN RECOGNITION OF SUBSTANTIAL AID.

IT is to those who have added interest to our pages by articles embodying thought and replete with valuable suggestions, that we are especially indebted for whatever merit there may be in our fourth volume. We congratulate ourselves and our teachers that our contributors embraces every department and rank of the profession. Pres. John Le Conte and Prof. Edw. R. Sill of the State University, who need no introduction to our readers, have contributed articles which indicate their faith in the system of which their school is the crown, and their active, progressive spirit. We can promise our readers frequent contributions from them in the future. If John Swett is more "active" at one time than at another, he has shown it by his almost constant appearance in Volume IV. That he cannot be idle, may be seen in his latest book, on "Methods of Teaching." It is the unanimous belief of our thinking teachers, that there is still a broad, undiscovered land in our educational world, and that John Swett will be the path-finder.

Professor J. M. Guinn of Los Angeles is another man hewn out for missionary work of the stalwart kind. He is a thinker and scholar every inch, but is not disposed to play the philosopher—if by philosophy is meant a calm acquiescence in imposition, a yielding to error, or a compromise with evil. Prof. Guinn has done much for education by his contributions to the JOURNAL; and we know the State will hear still more of him in the future.

The good words spoken last year of A. W. Oliver of Gilroy, W. W. Anderson of Santa Cruz, C. B. Towle of Vallejo, Volney Rattan of San Francisco, J. W. Redway of Alameda, Prof. Minns and Mrs. Aurelia Griffith of San Francisco, we are glad heartily to repeat. Their contributions, advice, and co-operation have been useful to us, and always in the right direction.

To Prof. William White of the San Francisco Boys' High School, our readers are indebted for much effort and care expended on producing a Mathematical

Department interesting and valuable to every educated teacher. The same may be said of Principal J. B. McChesney of the Oakland High School, who has never flagged in his endeavors to make a readable *resumé* of the progress of science from month to month. In addition, he has contributed some of the most practical and advanced articles on "Language Teaching" ever published through the medium of an educational journal.

The comparatively new department edited by Miss L. M. Washburn, of San José, entitled "The C. S. L. C.," has already evoked much favorable comment and interest. We hope for a continuance of her contributions, and feel confident they will add to the interest of the JOURNAL.

Mr. Charles M. Drake, for his inimitable sketches of teaching in the backwoods districts of California, is entitled to the thanks of ourselves and of the readers of the JOURNAL. His observations are always shrewd—never unpractical. Mr. Drake is not engaged in teaching at present. We believe he has purchased a place near Santa Barbara and is making a "bee-ranch." We hope his pursuits will not prevent the continuance of his articles, and this wish our readers are sure to indorse.

To our associate editors we are glad to acknowledge our obligations for much service rendered. Prof. Norton of our Normal, Principal Baker of the Gold Hill High School, Supt. Gilson of Alameda, and Supt. Sherman of Arizona, have all exerted themselves more or less to aid in the establishment of a good educational journal.

Supt. Sherman, in his arduous work of organizing a school system in Arizona, has earned the respect of all intelligent men in his Territory, irrespective of political belief, as is evidenced by the indorsement given him by two political conventions.

To our own State Superintendent Campbell, the JOURNAL is indebted for the same hearty and efficient support he has given all educational agencies since he has assumed the duties of his office. His work during the last session of the Legislature in preparing the School Law, and his visits to various parts of the State since, entitle his services to grateful recognition at the hands of all interested in educational advancement.

Among this year's contributors, especial thanks are due to Prof. J. F. Klenck of San José, to Prof. George Davidson of the U. S. Coast Survey, to M. D. Gage of Camptonville, Prof. George Gossman and Henry Senger of San Francisco, and to Mrs. Kate B. Fisher and Miss Irene Hardy of Oakland.

COUNTY INSTITUTES.

ABOUT thirty Institutes have been held in this State since the 1st of October. From a few we have received quite full reports; from many, brief notices; from some, not a word. On the whole, considerable interest is manifested by teachers in the methods and suggestions advanced at these gatherings, and they are always productive of some positive benefit. In twenty-six of these Institutes the State Superintendent participated, and much valuable information was elicited from him by teachers, he, on the other hand, making himself personally familiar with the educational wants of the various sections of the State.

THE MEETING OF THE STATE ASSOCIATION.

THE State Teachers' Association will meet in San Francisco Tuesday, Wednesday, and Thursday, 28th, 29th, and 30th inst. The programme, as prepared by the Executive Committee, will include an Address of Welcome, by Supt. Taylor; "Horace Mann," by A. L. Mann; "Proper Reading for School Libraries," by Mrs. Kate P. Fisher; "The Kindergarten," by Miss Kate Smith; "Honesty in Education," by C. B. Towle, of Vallejo; "The New School Law," by State Superintendent F. M. Campbell; "Natural Science in Common Schools," by Prof. Kleeburger; "The C. L. S. C.," by Miss L. M. Washburn; "President's Address," by Prof. H. B. Norton; "Primary Education," by Mrs. S. B. Cooper, and an address, subject not specified, by Prof. Bell. In the evening lectures will be given by Rev. C. C. Stratton, on "Christian Higher Education." John Muir is expected to lecture on "Alaska and the Glaciers," and Prof. Davidson on "Effect of Oceanic Currents on the Climate of the Pacific Coast." The two last named have not yet indicated their positive acceptance of the invitation. The Executive Committee hope, however, to secure them.

There will be but one section this year in addition to the general association meeting. This will be a primary section, before which will be delivered addresses by D. C. Stone, John Swett, C. H. Allen, and Miss Kate Smith.

IN CORRECTION OF A MISTAKE.

IN our October number the price of that excellent work, "Swett's Methods of Teaching," was omitted in one place and wrongly stated in another. A. L. Bancroft & Co., the Pacific Coast agents of the publishers, have been put to considerable trouble thereby, and a full correction is due them. The price of the book is \$1.50 a copy, postpaid. There has been, so we understand, a large demand for the book. We are pleased to know that its merits are so well appreciated.

OFFICIAL DEPARTMENT.

SUPERINTENDENT FREDERICK M. CAMPBELL, Editor.

BIENNIAL CONVENTION OF SCHOOL SUPERINTENDENTS.

DEPARTMENT OF PUBLIC INSTRUCTION, OF THE STATE OF CALIFORNIA, }
 Sacramento, December 4th, 1880. }

_____, *Superintendent of Schools*, _____ County:

DEAR SIR—The first Convention of County Superintendents of Public Schools, as provided for in subdivision fourteenth of section 1532, Political Code, is

hereby called to assemble at the Lincoln School building, Fifth Street, near Market Street, San Francisco, at 12:30 P. M. of December 28th, 1880.

All City Superintendents and all ex State, City, and County Superintendents are most cordially invited to attend and take part in the proceedings.

Very respectfully,

FRED. M. CAMPBELL,

Superintendent of Public Instruction.

_____, October 16th, 1880.

HON. FRED. M. CAMPBELL, *State Superintendent of Public Instruction:*

SIR—In the recent decision of the Supreme Court, which decided that there should be “no election,” the “Court” says that, “A Superintendent of Schools for each county shall be elected at each gubernatorial election. (Sec. 3, Art. 9.) The *Constitution does not expressly fix his term of office.*” (The italics are mine.) Now, it seems to me that this of right gave the outgoing Superintendents two additional months in office from the first Monday of January. That is, if the *Constitution* does not expressly *fix* the term of office, must not the “term of office” be fixed by the *statute* in force?

A number of superintendents in the State, myself among the number, vacated under an agreement with our successors, that if any decision in the future should go to show that we should have remained in office until March, then the salary for the two months intervening should go to the ex-superintendent; if not, then the present incumbent should retain it. I am of the opinion that the foregoing clause in the recent decision covers the case, and I am backed up by a number of our leading lawyers here. Will you please consult the Attorney-General on the point, and give me his opinion.

Yours truly, _____

OFFICE OF THE ATTORNEY-GENERAL OF THE STATE OF CALIFORNIA, }
Sacramento, December 1st, 1880. }

HON. FRED. M. CAMPBELL, *State Superintendent of Public Instruction:*

DEAR SIR—In answer to the question submitted to me by you in the letter of _____, I have to say, that the term of office of the County Superintendent of Schools of _____ County, elected at the general election in 1879, began on the first Monday after the first day of January, 1880.

The Constitution (Article 9, sec. 3) provides that, “A Superintendent of Schools for each County shall be elected by the qualified electors thereof at each gubernatorial election.” It is provided by sec. 20 of Article 20 of the same Constitution, that the terms of the officers provided for by this Constitution shall commence on the first Monday after the first day of January next following their election. That a County Superintendent of Schools for each county is expressly provided for by the Constitution hardly admits of doubt; that being true, the commencement of his term must be as provided in sec. 20 of Article 20. It is difficult to conceive of a plainer case.

I am, with great respect,

A. L. HART, Attorney-General.

OFFICE OF SUPERINTENDENT OF SCHOOLS,
 _____ County, October 9th, 1880. }

HON. FRED. M. CAMPBELL, *State Superintendent of Public Instruction:*

DEAR SIR—One of our teachers entered into a written agreement with a Board of Trustees, upon a copy of this blank, to teach a school for six months, commencing July 12th, 1880. The trustees, without consulting him, order a vacation of one week, for which time they do not intend to pay him. He wishes to know whether he is legally entitled to pay for the week mentioned.

Thinking that perhaps the question has been raised and decided in some other county, I submit the question to you.

Yours very truly,

_____ County Superintendent.

Not knowing of any decision having been rendered upon a similar question, it was submitted to the Attorney-General, and elicited the following opinion:

OFFICE OF THE ATTORNEY-GENERAL OF THE STATE OF CALIFORNIA, }
 Sacramento, December 1st, 1880. }

HON. FRED. M. CAMPBELL, *State Superintendent of Public Instruction:*

DEAR SIR—In answer to the question propounded in the letter of _____, referred to me for answer, I have to say, that in the case stated the teacher is entitled to pay during the vacation ordered by the trustees of the district, if he did not consent to the action of the trustees in declaring a vacation. The consent of the teacher in such a case, if not expressly made, might be implied from his acts at the time. Of course I do not know whether the teacher consented or not; but if he did not, his salary goes on the same as if there had been no vacation.

I am very respectfully,

A. L. HART, Attorney-General.

_____, December 1st, 1880.

HON. F. M. CAMPBELL:

DEAR SIR—In matters where there is a doubt in the course to be pursued by a county superintendent, I am very desirous of obtaining the opinion of my superiors.

I have a case on my hands which, if I pursue the instruction in Article 20, sec. 1858, will not only cause great complaint, but, to my mind, be an act of injustice.

I have a district which, according to the census returns, contains ninety-six pupils. According to the law I must assign two teachers to this district, which entitled it to \$1000, besides a share of all money left. Now the attendance is small, and they have employed only one teacher so far during this term, and do not propose to employ another. With one teacher they will secure \$1100 or more, and schools with three scholars less will receive \$500 or \$600. This, of course, is not right, and is the fault of the law; but what I wish to know is, am I compelled to give this district this amount of money?

I sincerely hope that the method of apportioning money will be changed immediately after the meeting of the Legislature, and take effect as soon as passed, for, in my opinion, there is no justice in the law. Your opinion in this case will assist me very much.

Very respectfully,

_____, County Superintendent of Schools.

DEPARTMENT OF PUBLIC INSTRUCTION OF THE STATE OF CALIFORNIA, }
 Sacramento, December 3rd, 1880. }

———, *Superintendent of Schools:*

DEAR SIR—There is no course left to you but to follow strictly the law as laid down in secs. 1543, 1858, and 1859, Political Code. There is no more vexed question involved in school legislation than this same question of how school money shall be apportioned among the districts of the several counties equally—*i. e.*, without injustice to any, and without discriminating in favor of, or directly against, either the large or the small districts. It received at the hands of the last Legislature more attention than perhaps any other provision of the law, and the present plan was adopted after hearing from delegations and committees from several counties. This should be one of the subjects that shall receive the serious attention of the Convention of Superintendents to assemble in San Francisco on the 28th of this month; and I trust that you will come prepared to suggest some plan for consideration that shall prove to be free from the objections which can be urged against any of the plans heretofore adopted or proposed.

I am very truly yours,

FRED. M. CAMPBELL,

Superintendent of Public Instruction.

SCIENCE RECORD.

THIS RECORD is under the editorial charge of Prof. J. B. McCHESENEY, to whom all communications in reference thereto must be addressed.

THE PLANETS IN DECEMBER.—*Mercury* is a morning star, rising on the 3rd at 5 h. 12 min. A. M.; on the 13th at 5 h. 1 min. A. M., and on the 23rd at 5 h. 48 min. A. M. He is near the moon on the 1st and again on the 30th; stationary among the stars on the 3rd, and near Mars on the 23rd. *Venus* is an evening star, setting on the 6th at 7 h. 10 min. P. M.; on the 16th at 7 h. 38 min. P. M., and on the 26th at 8 h. 9 min. P. M. She is near the moon on the 4th. *Mars* is a morning star, rising on the 6th at 5 h. 57 min. A. M.; on the 16th at 5 h. 57 min. A. M., and on the 26th at 5 h. 54 min. A. M. He is near the moon on the 1st and 30th. *Jupiter* sets on the 6th at 2 h. 39 min. A. M.; on the 17th at 2 h. 1 min. A. M., and on the 27th at 1 h. 21 min. A. M. He is stationary among the stars, having ceased his retrograde movement, on the 4th, and near the moon on the 10th. *Saturn* sets on the 7th at 3 h. 47 min. A. M.; on the 17th at 2 h. 21 min. A. M., and on the 27th at 2 h. 8 min. A. M. He is near the moon on the 11th, and stationary among the stars on the 25th, his apparent retrograde movement then ceasing.

MICROSCOPICAL OBJECT-GLASSES.—All objectives have what is call the Society screw, so that whatever form or make of microscope is used the objective of another maker is sure to fit it. It is useful to know how many threads there are to this screw, and the number can be stated to be thirty-seven.

IN the neighborhood of Vincentown, N. J., asphaltum and amber have been found, the former in the ash-marl, a layer above the green sand proper, and the latter in the marl of the cretaceous formation.

ADMIRAL SERRES justifies the American practice of increasing high sails of sailing vessels at the expense of the lower, on the ground that the velocity of the wind at the upper masts is greater than at the lower masts.

TRANSFERRING IMPRESSIONS OF FERNS TO WOOD.—First, well dry your fern leaves between blotting paper, then soak them in aniline dye (the color you want), take them out and redry them nice and flat, then damp your wood, and lay the fern leaves upon it and apply pressure. Beautiful impressions may be taken in this way.

DR. BARNES, of San Diego, Cal., ascribes the singular mound formations covering the dry soil of that region to the effect of wind and certain low-lying broad-branched plants with a large system of roots, chief among which is the rhus laurina. These act as nuclei, around which the wind collects dust, and the result is the hillocky appearance of the desert, which has puzzled many travelers.

IN Berlin there is a chemical laboratory established by a society of housewives for the examination of articles of food. It is directed by a competent chemist, who gives to the members of the society a course of lectures on practical chemistry. There is also a cookery school under the patronage of the society. Domestic servants who have remained a certain number of years in one household (of a member of the society) are rewarded with prizes. The society also procures situations for domestic servants.—*Popular Science Monthly*.

PULMONARY consumption appears to be an exceptionally frequent cause of death among telegraphers, and one reason assigned for the fact is the peculiarly strained posture which an operator receiving messages continually is obliged to assume in order not to lose the characters as they are ticked out to him from the sounder. "The operator in receiving bends his head and shoulders on his left side while listening to the sounder, this position confining his left lung and heart in an unnatural position; and, being assumed day after day, month after month, eventually brings on the dread disease—consumption." But a writer in the *Journal of the Telegraph* suggests a different cause for the prevalence of consumption among telegraphers, viz., the original physical insufficiency of a large proportion of young men who enter on this career.

THE minute organisms or microbes, which M. Pasteur has shown to be concerned in epidemics and contagious diseases, are so very minute that they may sometimes easily escape detection, especially in pure water. In such case they may be killed without being deformed, by certain chemical agents, among which is osmic acid, and will sink to the bottom in such quantities as to admit of microscopic examination. The deposit may be examined after several hours (twenty-four, or even forty-eight) if the water has been very pure. Coloring reagents mixed with dilute glycerine may also be used with advantage in the work.

THE SUN'S HEAT.—During his visit to the Cape of Good Hope, in 1838, for the purpose of making astronomical observations, Sir John Herschel made some exceedingly interesting experiments for the purpose of determining the amount of heat the earth receives from the sun. The results were so astounding and involve the exhibition of power on a scale so much beyond that on which the human mind is ordinarily engaged, that it is difficult for any form of words to suitably express them. The following unique suppositions were framed, however, for this purpose: "Were a rod of ice forty-five miles in diameter darted toward the sun with the velocity of light, its advancing point would be melted off as fast as it approached, provided all the solar rays could be concentrated upon it. Or, were it possible to span the inconceivable distance which separates the earth from the sun by a solid column of ice two and one quarter miles in diameter, and the sun then concentrate all his power upon it, it would dissolve and melt, not in an hour or a minute, but in a single second. One swing of the pendulum and it would be water, several more and it would be dissipated in vapor. An easy calculation shows that to produce this amount of heat by combustion would require the hourly burning of a layer of anthracite coal about sixteen feet thick over the entire surface of the sun. This is equivalent to a continuous evolution of more than seven thousand horse-power on every square foot of the sun's area."

MATHEMATICS.

THIS department is under the editorial charge of Professor WM. WHITE, to whom all communications relating thereto must be addressed.

The following is MR. KLENCK's contribution continued from the last number of the JOURNAL:

I.—Hypothesis (Fig. 2).

$$\begin{aligned} AB: AH:: AH: HB. \\ AC=HB. \end{aligned}$$

Conclusion— $AH: AC:: AC: CH.$

Demonstration—

From the proportion, $AB: AH:: AH: HB,$ (1.)
 we have, (Prop. VI, B. II) $AB \cdot AH: AH:: AH \cdot HB: HB.$ (2.)
 But by hypothesis, $AB \cdot AH=AC, AH \cdot HB=CH,$ and $HB=AC,$
 making this substitution in proportion. (2.)

$$AC: AH:: CH: AC.$$

By inversion, (Prop. V, B. II) $AH: AC:: AC: CH.$ Q. E. F.

II.—By hypothesis (Fig. 3).

$$AB: AH:: AH: HB, \text{ and } AH'=AH.$$

By Prop. VI, B. II, $AB+AH: AB:: AH+HB: AH.$

But $AB+AH=H'B, AH+HB=AB,$ and $AH=AH'.$

Substituting, $H'B: AB:: AB: AH'.$ Q. E. F.

SOLUTION II.—Let AB (Fig. 4) be the given line; at B erect a perpendicular, $BC=AB,$ and from the middle point M of AB draw $MC;$ and with MC as radius, and M as center, describe a semi-circle, meeting AB produced in E and $D;$ from the point A as center, and with AD as radius, describe the semi-circle $DGF;$ then will F be the required point, or we shall have the proportion:

$$AB: AF:: AF: FB.$$

By Prop. XXIII, B. IV, we have $DB: BC:: BC: BE.$

And by construction, $BC=AB, BE=DA.$

Substituting, $DB: AB:: AB: AD; i. e.,$ the line DB is divided at the point A in extreme and mean ratio.

But by the first part of the above theorem we have

$$AB: AF:: AF: FB. \quad \text{Q. E. F.}$$

L. D. SMITH, principal of Los Angeles High School, submits the following:

PROBLEM 31.—Solution.—The fly simply descends on the hypotenuse of a right-angled triangle, the base of which is the two adjacent sides of the room; $20+20=40$ feet, and the altitude 15 feet. Ans. $42.72+$ ft.

Here is another:

PROBLEM 36.—Place Bro. Hules's fly upon the apex of a cone, the circumference of whose base is 12 feet, and the altitude 8 feet. The fly descends

spirally, passing entirely around just twice, or once for each 4 feet of the height of the cone. How far does it travel?

And one more:

PROBLEM 37.—A bank discounts a note at 6 per cent. for such a time as to make the *interest* it receives on its money exactly 8 per cent. Required the time.

NEWS RECORD.

OUR record closes on November 29th.

Foreign and Domestic.

The activity of Mount Vesuvius increases.

Small-pox is again on the increase in San Francisco.

Mrs. Lydia Maria Child, the authoress, died recently.

The cold weather in the East interferes with business affairs.

Serious floods prevail in the province of Florence, Italy.

The Persians have destroyed the Kurdish villages around Soujbolak.

During October 61,312 immigrants arrived in the United States.

Sir Alexander Cockburn, Lord Chief Justice of the Queen's Bench, is dead.

James D. Williams ("Blue Jeans"), Governor of Indiana, died at Indianapolis, aged 72.

General Miles has been appointed Chief Signal Officer in place of General Meyer, who died recently.

The Director of the Mint estimates the total gold coin and bullion in the country at \$528,000,000.

A statue to Alexander Hamilton was unveiled in Central Park, New York, with appropriate ceremonies.

A frightful colliery disaster occurred recently at St. Ellarton, N. S., causing the death of thirty to forty miners.

The distance between the terminal points of the Southern Pacific Railroad and the Atchison, Topeka, and Santa Fe Railroad is now 125 miles.

The presidential election held Nov. 2nd, 1880, resulted in the election of the repub-

lican candidates, General James A. Garfield and Chester A. Arthur.

It is believed that a treaty concluded between the United States and China will be perfectly satisfactory to the people of the Pacific Coast, on the subject of Chinese immigration.

Dervish Pasha entered Dulcigno after a slight engagement with the Albanians. The place will now, probably, be given up to the Montenegrins, according to the conditions of the treaty of Berlin.

Educational.

MISSOURI.—Over 20,000 pupils in St. Louis public schools are studying German.

The education of young monkeys to do some portions of household work has been proposed as a not impossible thing of the future.

A chorus school has this year been organized in the New York College of Music, for the purpose of giving pupils with limited means an opportunity to cultivate their voices and to read music at sight.

John M. Bloss has been elected State Superintendent of Indiana, to succeed Hon. J. H. Smart, who has held that position for twelve years past. Mr. Bloss is said to be an excellent man, and the Indiana school system will not suffer.

A teacher, Miss Hattie Southwick, of Northbridge, Mass., has resigned, to accept a position as teacher in the Royal Normal College, London, England. She was a graduate from the State Normal in Framingham, class of '77.

President Angell, Michigan State University, reports that the number of women study-

ing in the University has increased from 34 in 1871 to 132 in 1879, the date of his report, and that in every branch of study women had done superior work. He also reports that there had been no more trouble with women than with men on the health question.

In New York is a cooking-school. At the head of it is Mrs. Robert L. Stuart, whose husband is worth \$4,000,000. Mr. Stuart's father came to this country a bankrupt. He opened a one-cent candy shop, paid \$10,000 indebtedness, and left the business to his sons, who have been very successful and as benevolent as successful. Mrs. Stuart's example is a lesson.

In 1879 France spent \$12,000,000, or about \$2.70 for every pupil in her elementary schools; Germany \$28,000,000, or nearly \$5 for every pupil; Switzerland, \$1,741,685, or a little over \$4 for every pupil; Denmark, \$3,000,000, or a little over \$4 for every pupil; Belgium, \$5,000,000, or nearly \$6 for every pupil; the Netherlands, \$3,063,617, or nearly \$7 for every pupil; Spain \$5,000,000, or \$8 for every pupil.

The Superintendent of the Oswego schools, Mr. Drummond, has modified the course of study for the primary schools in a way that indicates good judgment. The subjects for each year and for each day in the year on language, numbers, and objects. As to how to teach them, the teacher is left to her own skill. This is a movement in the right direction. If a teacher knows his business he will know what to do and how to do it. There is no greater delusion than that the pupils of our schools are well taught, because there is an elaborate course of study, and it must be overthrown.—*N. Y. School Journal.*

Superintendent Wickersham, of Pennsylvania, has addressed a significant circular to the State Normal School, enforcing the necessity of a more thorough training in all departments of the science of teaching for their graduates. In the junior class he demands school economy, and detailed methods of teaching common-school branches for half the year. In the senior class, mental philosophy, science of teaching, history of education, school system and school laws are required, with such practice in the model school as may graduate an "expert in practical teaching."

In the California Normal School, school economy, methods of teaching, and education as a science have always received due attention. It is proper and timely to remark, that under Principal Allen, our Normal School has accomplished a magnificent work in raising the standard of teaching on the Pacific Coast. Too great credit cannot

be given him and an exceptionally able corps of assistants for their clear conception of the scope of normal work and the fidelity and efficiency with which it is carried out. We regret that the sphere of its usefulness is not extended so as to take in every young man and woman who expects to make teaching a profession.

Personal.

Ole Bull begged that Mozart's Requiem might be played while he was dying, and it was the last music he heard.

General Garfield composedly played croquet while the election returns came thronging in for him with promises of good fortune.

Benjamin Pierce, LL. D., Perkins Professor of Astronomy and Mathematics in Harvard University, is dead, after fifty years' service.

Mr. Hudson, the Shakspearean editor and writer, is more than six feet tall, and spare in person; has a smooth face and rapidly silvering hair, and although past sixty, walks rapidly and without a cane.

Mr. Gladstone having been asked, some little time ago, if he did not consider Tenyson the greatest genius of the age, replied in the negative, and added that without a doubt Disraeli merited that title.

G. W. Childs, publisher, and Anthony Drexel, banker, have bought 600 acres twelve miles from Philadelphia, with the purpose of selling lots to persons of moderate means, whom they will assist in building homes when necessary.

The Russian traveler, Remirowitch-Dantschenko, has discovered on the highland of Daghestan a tribe resembling Cosacks, but following the Mosaic law strictly, and retaining ancient Jewish names—undoubtedly one of the lost tribes.

To the truth of the saying, that the size of the soul has nothing to do with the size of the body, no stronger testimony is needed than the small physical stature of such men as Holmes, Howells, Cable, Whipple, Aldrich, Stedman, and a host of others.

It is a noticeable fact that a large number of women of genius have in our time seen fit to marry men many years younger than themselves, prominent among them being Marian Evans, Miss Thackeray, Rose Terry, Grace Greenwood, and Dinah Mulock.

There is an autobiography of Cotton Mather in the possession of a gentleman in New York. It is not a little singular that a descendant of Cotton Mather should have

married a descendant of the Rev. George Burroughs, one of the witchcraft victims.

Miss Schoonmaker, of Kerhoneson, New York, at the age of twenty-four inherited a large farming property very heavily mortgaged, and had at that time five helpless people dependent upon her. In the fourteen years that have since elapsed she has taught school, managed a farm—going into the field herself out of school hours—has paid off the mortgage, improved the property, and become an extensive stock-raiser.

Professor Asa Gray, our renowned botanist, celebrates his seventieth birthday presently, with his mental and physical powers in full vigor. The professor once, in looking over an old herbarium, found a specimen of the fruit of a plant of which nothing was known. From this fruit he founded a genus, described and classified the unseen flower, and when, many years after, the plant was rediscovered in the mountains of North Carolina, the flower was found to answer his description in almost every particular.

Alexander Graham Bell is a tall and well-proportioned man, with black hair and beard, shining black eyes, a genial smile, and very gentle and courtly manners. His wife, an exceedingly pretty woman, was a Miss Hubbard, and although she is what is called a deaf-mute, she both talks and understands her interlocutor as well as those who have always heard and spoken. Her mother, acutely distressed by the difference between her child's future and that of more fortunate children, bent her whole energies to the task of discovering methods of communication by the use and observation of the muscles of the lips and throat, and was largely instrumental in developing and perfecting the system by which the educated deaf now talk themselves and understand what others say.

General Notes.

Thomas Hughes has sailed for home. He has established an English colony in Tennessee named Rugby. It begins with all the modern conveniences, which may be with it or against it.

By the Revised Code of Mississippi, wives and husbands inherit the whole of each other's property if there are no children, and a child's portion if there are; and a wife can will her own property as freely as an unmarried woman can.

A letter has been recently received, by way of St. Petersburg, which was written thirteen months ago by Lieutenant De Long, the commander of the Arctic steamer *Jeannette*. At that date, August 29th,

1879, the vessel stopped at Siberia to learn about the Swedish exploring expedition. The officers and crew of the *Jeannette* were all well, and were to sail that night for Wrangell Land. This letter will greatly relieve the general anxiety which has been felt in regard to the fate of this expedition.

It is stated as a singular fact that Eastern people who go to Colorado usually lose, on an average, about one-eighth of their weight. This is owing to the high altitude of the country, to the dry, light atmosphere, and to the comparative abundance of oxygen, which consumes the tissues and taxes the vital functions to a greater extent than on lower altitudes. It is also noticed that both men and animals who go there lose a portion of their strength and muscular power, not being able to endure as much hard work. Mental labor is even more exhausting than physical. There is great difficulty in being thoroughly acclimated, but when this is accomplished, these drawbacks do not continue.

The nutritive value of different articles of food has attracted the attention of scientific persons for several years. Some interesting information in respect to fish was given at the meeting of the American Association of Science. In one hundred pounds of fresh cod there are eighty-three pounds of water, and but seventeen of solids. In the same weight of salmon there are thirty-three and one-half pounds of solids—about twice as much. Next to salmon in nutritive value come, in relative order, fat halibut, shad, white-fish, mackerel, blue-fish, lean halibut, striped bass, flounder, and many will be sorry to see that lake trout holds the last place. It was stated that the prevailing idea that fish is richer in phosphorus than are other meats is not founded upon fact.

QUESTIONS. TIME—EVERY DAY.—1. What made you go into teaching, anyhow? 2. Now you are in it, what makes you stay in it? 3. Do you teach better this year than you did last year? 4. Do you scold much? 5. Have you any "hard feelings" against any of your pupils? 6. Do you slight the poorly dressed and the unhand-some, or do you send your rain on the thankful and the unthankful alike? 7. If a man, do you smoke? And if you do, do you think you ought to? 8. And further, do you drink—that is, even moderately? And if so, do you think that you would better have a "millstone" around your neck? (See Bible.) 9. Do you think you exert much moral force on the pupils in your school? 10. Are you sure that, on the whole, they will be on the side of right aey grow up to be men and women?

Girard left \$9,000,000; of this, he gave \$2,000,000 for a college for orphan boys. The college was opened in 1848. Astor's property was valued at \$20,000,000. He gave \$400,000 for the Astor Library. His son gave a like sum. James Lick, of California, gave about \$2,000,000 for an observatory, telescope, and the encouragement of the mechanic arts at San Francisco; also, \$60,000 for a monument over the grave of Key, author of the "Star Spangled Banner." George Peabody gave \$1,500,000 for lodging houses for the London working classes; \$1,000,000 for the Peabody Institute in Baltimore; \$150,000 for Harvard Institute of Archæology; \$150,000 for physical science in Yale College; \$2,000,000 for common schools in the Southern States. Ezra Cornell gave \$1,000,000 to Cornell University, Ithaca, N. Y. Jay Cook gave hundreds of thousands in benevolence. W. W. Corcoran, of Washington, has given \$3,000,000 in public benefactions, and \$1,000,000 in private charities. His chief gifts have been to Columbia University, the Corcoran Gallery of Art, a home for ladies who have become dependent, the University of Virginia, and Oak Hill Cemetery, near Washington.

There has recently been established a new association under the name of "Society for Political Education," non-partisan in its character, and, in the best sense, national in its scope. The society is to be managed by an Executive Committee of twenty-five members selected from different sections of the United States, many of them being experts in different departments of the study of social and political science. A singular feature of its organization is, that it has no president, and thus avoids the risk of having its aims confounded with the idiosyn-

crasies of any individual chosen for its head. The correspondence of the society is to be divided among five secretaries, one each for the East, including the Middle States, the North-west, the South-east, the South-west, and the Pacific slope. Its Executive Committee, which is not yet filled up, now comprises Prof. W. G. Sumner, of Yale College, New Haven; Hon. David A. Wells, of Norwich, Conn.; Charles Francis Adams, Jr., of Boston, Mass.; Geo. S. Coe, Horace White, Geo. Haven Putnam, R. R. Bowker, E. M. Shepard, and R. L. Dugdale, of New York City; Franklin Mac Veagh and M. L. Scudder, Jr., of Chicago, Ill.; Gen. Bradley T. Johnson, of Richmond, Va.; Hon. John H. Ames, of Lincoln, Nebraska; A. Sidney Biddle, of Philadelphia, Pa.; A. Mitchell, of New Orleans, La.; Geo. Mason, of Galveston, Texas; and Peter Hamilton, of Mobile, Ala.

The society has selected as a course of reading for the first year, Nordhoff's "Politics for Young Americans," Prof. Perry's "Introduction to Political Economy," Johnson's "History of American Politics," and McAdam's "Alphabet in Finance." There are two classes of membership: Active and Co-operative. Active members are such persons as will pledge themselves to read the books recommended by the society for the official year, and included in its *Library of Political Education*, and will pay an annual fee of 50 cents, (which may be forwarded in postage stamps). Any person may become a co-operating member on the annual payment of \$5 or more, which shall entitle such member to receive all the tracts published by the society. There are no other conditions or obligations of membership.

EDUCATIONAL INTELLIGENCE.

SUMMER INSTITUTES.

ALAMEDA COUNTY.

IT is not too much to say, that Alameda County has not before witnessed a Teachers' Institute so well conducted, and so generally advantageous, as that which adjourned on the 15th ult., after a four days' session. And to the careful preparation made by Superintendent Gilson must the credit be justly ascribed. He devotes himself with fidelity solely to the duties of his office, and is never tired of working for means to improve the efficiency of the teachers of his county. The first two days of the session this year were devoted to visiting the schools of San Francisco, observing the methods of teaching there, and making notes of merits and faults. Mr. Gilson had printed and distributed a directory

of the chief schools of San Francisco, so that no time was lost, and the best and most accessible were visited. The last two days were devoted to lectures, essays, and discussions of methods of teaching. The lectures and papers especially worthy of mention were on "Physiology," by Prof. Norton; "Reading," by Prof. Allen; on "The Classical Side of English," by Prof. Martin Kellogg, of the State University; "Thoroughness," by W. H. Galbraith, of Haywards; "Normal Primary Methods," by Miss N. J. Titus, of the Normal School; and a lecture by State Superintendent Campbell, on "The State and Secondary Education," which is highly commended as an able effort.

LOS ANGELES COUNTY.

The Los Angeles Teachers' Institute convened in Union Hall, Los Angeles, November 8th, and continued in session five days. About one hundred and fifty teachers were in attendance. After organization, County Superintendent J. W. Hinton delivered one of the neatest and most appropriate opening addresses we have ever listened to.

The Institute was one of the most valuable ever held in the county. The success of the Institute is largely due to the labors of our efficient county superintendent. A distinguishing feature of the Institute work was the number of class exercises illustrating the methods of teaching different branches of study. Among these may be named with commendation Mr. W. S. Reavis' class in geography, Miss M. K. Simonds' class in primary arithmetic, Miss Isabel Babcock's class in primary reading, and Mr. S. H. Butterfield's class in reading and elocution. These presentations of class work by experienced teachers will be of great value to the young teachers present. W. G. McPherson read an excellent paper on "United States History." Miss M. A. Hodgkins, of the Los Angeles High School, gave some valuable hints on the "Use of School Libraries." Mrs. Averill read an instructive paper entitled, "Success in Life." Mr. J. E. S. Bell read an able and well-written paper, in which he urged the necessity of striving to attain a higher plane of intellectual eminence for the profession of teaching. Mr. J. M. Guinn read a humorous and instructive paper entitled, "Pedagogy and Pedagogues in the Olden Time." It was a series of amusing and racy sketches descriptive of the schools, school-keeping, and the school-masters in the "Far West" thirty or forty years ago. Miss Mary Squires, a very promising young teacher, read a well-written and very instructive paper called, "The Teachers' Material." (It will appear in the JOURNAL.) Lectures were delivered by Dr. E. S. Carr, Mrs. Jeanne Carr, and State Superintendent F. M. Campbell. Mrs. Carr's talks to the Institute were replete with valuable suggestions to the younger teachers. Ex-Superintendent McDonald discussed "School Organization." Ex-Superintendent McFadden presented the subject of "Bookkeeping"; Mrs. Jones, "Grammar"; Mr. Newall Mathews, "Physiology"; Mr. J. N. Hewes, "Business Arithmetic"; Mr. W. H. Henderson, "Literature"; Mrs. C. P. Bradfield, "Drawing," and G. C. Hall, "Oral Language Lessons."

A series of resolutions, setting forth the necessity of a branch normal school for Southern California, and asking our representatives in the next Legislature to urge our claims, were passed.

Hon. R. F. Del Valle, member-elect to the Assembly, addressed the Institute, pledging himself to do all in his power to obtain the school. A committee of the following named teachers and citizens was appointed to collect statistics and aid in urging upon the Legislature the necessity of such a school: J. M. Guinn, R. B. Warren, John R. Brierly, J. B. Dubois, J. N. Hewes, Supt. J. W. Hinton, and Mrs. Jeanne Carr.

NAPA COUNTY.

The teachers of this county assembled in St. Helena about the middle of October, to hold their Institute for 1880. Nearly all the teachers of the county were in attendance, and considerable interest was manifested. Supt. C. M. Walker presided. The editor of the JOURNAL, and Miss Kate Smith the Kindergartner, of San Francisco, were in attendance and conducted the exercises. An active part was taken in the exercises by Prof. N.

A. Morford, principal of the St. Helena schools, Mr. Shearer of Napa, Mr. Hamilton of Calistoga, and Mr. and Mrs. Mitchell of Pope Valley. Miss Kate Smith lectured one evening on "The Kindergarten," and also gave some examples of the Kindergarten songs. Mr. Lyser spoke on "Literature and Common Sense in Education."

SANTA CRUZ COUNTY.

The Institute of this county was held this year in Watsonville. It was conducted by Prof. Allen in his usual inimitable manner, and with interest and profit on the part of the teachers. Mr. W. M. Scribner, the author of the system of penmanship, was present and gave some valuable lessons in writing. State Supt. Campbell delivered a lecture on "Higher Education," which proved so pointed and interesting that he was asked to repeat it in Santa Cruz on the evening after the Institute adjourned in Watsonville. Dr. C. E. Stratton, of the University of the Pacific, also delivered an able address.

CALIFORNIA.

SAN FRANCISCO COUNTY.

Superintendent John W. Taylor met with a sad loss by the death of his wife on the 28th of November. Mrs. Taylor was a lady unaffected in manner, amiable in disposition, beloved by all who knew her. Suffering from consumption for two years past, she bore her trials and pains with the most exemplary sweetness and patience. The heart-felt sympathy of hundreds of friends is with Mr. Taylor in this sad hour.

By the time the JOURNAL reaches subscribers, the Board of Education will have elected another president, in place of N. B. Stone, who has occupied that position for the past year. The teachers will undoubtedly say "*vale* Stone" without much regret. Mr. L. H. Van Schaick will probably be elected to fill the vacancy. Mr. Stone, by reason of more than sixty days' absence from the State, is really no longer a member of the Board. There is again a vacancy which must be filled by appointment of the superintendent and confirmation by the Board.

Supt. Taylor's report, which is now in press, bids fair to be one of the ablest and most exhaustive educational documents issued on this side of the continent. Supt. Taylor devotes considerable space to the discussion of teachers' salaries, and deals some telling blows against low wages. He

has prepared and published thirteen tables, showing comparatively the salaries paid in all the different departments of the public service. From these it is seen at a glance, first, that teachers are the worst paid of all public servants; second, that the education, refinement, responsibility, in short, every moral and mental qualification, is on the side of the teacher. Mr. Taylor's statistics and arguments are directly in the line of the points constantly urged in the JOURNAL.—*i. e.*, that while the majority of teachers can acceptably perform the clerical work of government, only an unimportant minority of these same clerks can perform the teachers' work.

If we may permit ourselves to name one member of the Board of Education, whose voice and the weight of whose influence have always been directly thrown in favor of good teaching talent, and adequate compensation therefor, that man is L. H. Van Schaick. Mr. Van Schaick was formerly an able and successful teacher in Santa Clara County. He has consequently a thorough knowledge of educational details, together with an ardent desire to see the system accomplish the ends for which designed. With the aid of Messrs. Kimball, Harvey, McDonnell, Ferguson, and Hussey, we trust that the second year of the administration of this Board may be more successful than the first.

MENDOCINO COUNTY.

Prof. Wm. Crowhurst, who has been lecturing the past month for the I. O. G. T. along the coast of Marin, Sonoma, and Mendocino Counties, visited all the schools in session, and reports them generally doing very well under the new series of text-books, the teachers throwing much life and enthusiasm into their work. With the exception of San Rafael, Manchester, and Little River, something ought to be done to improve the condition of their school buildings. Along the coast of Mendocino County the school-house at Manchester is the only one built upon modern principles.

MONO COUNTY.

Mr. W. H. Morrow, a graduate of the State University, has been engaged for the North Antelope school, and enters upon his duties the 6th inst.

NAPA COUNTY.

The Napa Collegiate Institute, in Napa City, under the exceptionally able management of Prof. A. E. Lasher, seconded by the liberality of his Board of Trustees, now ranks second to no similar high-grade academy on the Coast. In fact, we believe it the best of its kind. Extensive improvements have recently been made in the buildings and grounds, and, despite the "hard times," the attendance, larger than ever before, is still increasing. Prof. Lasher is decidedly "the right man in the right place," for we know it is mainly by his efforts that so high a degree of efficiency and success has been attained.

SOLANO COUNTY.

That it pays to employ superior talent

and give good salaries is shown in the continued prosperity of the Vallejo schools under the efficient management of Messrs. Towle and Babcock.

The teachers of Vacaville and vicinity are taking a lively interest in educational matters. A teachers' association, together with a teachers' class (normal and scientific) has been organized, and is under the management of A. W. Sutphen.

Miss Mary E. Elliott, the efficient principal of the Vacaville public schools, is President of the association, and Mr. J. R. Tilson, Secretary.

TULARE COUNTY.

All the schools in this county are supplied, and reported as doing well. Supt. Ellis is one of the most faithful and zealous school officers in the State, and spares no pains to make the schools under his charge effective.

YUBA COUNTY.

The school at Smartsville is sustaining its excellent reputation under the able principalship of Dr. Connolly, aided by Miss Rosa Farley. Miss Farley is a "Smartsville girl," received her education in the village school where she now teaches, and is a promising member of the profession in Yuba County.

WASHINGTON TER.

Clara A. McCarty was elected Superintendent of Schools of Pierce County by a majority of 408, polling the largest number of votes of any candidate on the ticket.

EXAMINATION QUESTIONS.

[Continued from October number.]

Physics.

(10 Questions, 8 Credits each.)

1. Define motion.
2. Name two forces which produce circular motion.
3. What three forces cause a kite to fly?
4. Define weight.
5. Where on the earth's surface will a body weigh most?
6. Define matter.
7. What causes a liquid to flow through a syphon?
8. State the difference between *music* and *noise*.
9. Where will the report of a pistol sound louder—at San Francisco, or on the top of Mt. Shasta? Why?

Drawing.

1. Given a line, as A———B, equal to the hypotenuse of a right-angle triangle, and another line, as D———E, equal to one side of the same. Describe the manner of constructing the triangle. 6 cr.
2. Show the method of dividing a given line, as A———B, into seven equal parts. 6 cr.
3. Show how a perpendicular may be erected at the extremity of a given straight line. 6 cr.
4. (a) What is meant by symmetrical arrangement on an axis?
(b) By symmetrical arrangement so as to cover a surface? 6 cr.

5. State the different ways in which a circle may appear in perspective. 6 cr.

6. Draw in parallel perspective a cube with the bottom visible. 10 cr.

The horizontal line, point of sight, &c., must be correctly shown.

TEST-EXERCISES IN SPELLING.

anger,	margin,	lawyer,
jingle,	title,	baptize,
drumming,	mercury,	receipt,
atom,	arrow,	since,
largest,	granite,	villain,
cone,	solid,	Dols,
differing,	engines,	Berlin,
mirror,	coal,	thieves,
paper,	anchor,	turkeys,
chalk,	knives,	Arthur,
sponges,	lace,	apples,
Florence,	lawsuit,	angel,
dustpan,	melon,	biggest,
nation,	mowing,	balm,
naval,	niece,	Charles,
razor,	napkin,	cheese,
heifers,	oak,	cipher,
latent,	preacher,	daisy.

The following miscellaneous primary-school questions were prepared by the primary teachers of Cambridge, Mass., at the request of Superintendent Cogswell. We submit them to our readers, with the request that they will use them in their schools, as the basis of suggestive "talks" with their pupils:

- What are newspapers for?
- What are the uses of water?
- How many toes has a hen on one foot?
- Why cannot a hen swim as well as a duck or a swan?
- Why does it take eight shoes to shoe an ox?
- What cities and towns join the city in which you live?
- Where does the rain come from, and where does it go?
- What can you tell me about the clock?
- What would you probably see in a farm-yard?
- What numbers could you write with the figures 1, 3, and 5?
- How should children always treat old persons?
- Of what use are our thumbs? Can we do without them?
- Name some articles made of iron. Of wood. Of tin.
- Tell me all you know about hay, corn, flour.
- What are some of the things you can do with snow?

Of what use is a thermometer? A weather-vane?

What things are made in this city?

What places have you visited in Boston? In any city?

Why ought we to treat animals kindly?

What is an apothecary shop? A retail store?

Name the different kinds of fruit-trees you have seen.

In what position should you stand while reciting?

What should you do in order to become good scholars?

Of what are baskets made? Boxes? Bags?

Tell me something the horse can do. The dog.

Mention some things formed from water. Name some articles of food. Of dress.

What do you see on your way to school?

What animals are domestic? Name some of them.

Where and how is coal obtained? Wood? Oil?

Why do we not see the stars in the day-time?

What makes the little seeds we plant grow?

In asking questions, do we always keep the voice up?

Of what use are object lessons? Describe your slate.

Can a blind person read? If so, by what means?

How is this building heated? How is your house heated?

What things can we do with our hands? With our feet?

Where does tea come from? Sugar? Rice? Raisins?

What is the difference between a village and a city?

Give a sentence containing the word that I mention.

What season of the year is this? Month? Day? Time of day?

What do people use for fuel? For light? Name the different modes of traveling.

Where do the different kinds of fruit we eat grow?

What kinds of birds do we see in this city?

Name the different animals you have seen.

What would you find at the sea-shore?

What kind of vegetables do you know about?

What do people do with eggs? With milk?

How are ships useful to us? Speak of their size.

Do cloth and flannel grow? Do raisins?

—The Primary Teacher.

BOOK NOTICES.

TEXT-BOOK ON RHETORIC. By Brainard Kellogg, Professor of the English Language in the Brooklyn Collegiate Institute. New York: Clark & Maynard, 276 pp. Introduction price, 85 cents.

This book has evidently been prepared to follow Reed and Kellogg's "Higher Lessons in English." For rhetoric it is arranged on the same plan as the preceding books are for grammar. The pupil must establish every principle of rhetoric by practice, and not by memorizing the text-book. The definitions are short and to the point, the directions concise, and the examples numerous. Any pupil that is able to complete this text-book in the way indicated by the author, will certainly have a more thorough practical knowledge of the subject than pupils usually obtain at school.

For pupils having the ordinary knowledge of English grammar, this book will be difficult. To those that have *thought* their way through the preceding books of the series, this one will probably be no more difficult than they are.

There are blemishes in this book, as there are in all new text-books; but one must look somewhat carefully to find them. A text-book on rhetoric should not contain any improprieties or inaccuracies of language, except in examples for correction.

AN ELEMENTARY TEXT-BOOK OF BOTANY. Translated from the German by Dr. K. Prantl. Philadelphia: J. B. Lippincott & Co. San Francisco: A. L. Bancroft & Co.

This octavo volume of 332 pp. is devoted to the morphology, anatomy, physiology, and classification of plants. The plan is similar to that of Prof. Sachs' more voluminous work, to which it may serve as an introduction. The illustrations—equal to about 500 figures in Gray's Text-Book—are excellent, and are mostly "after Sachs." Two-thirds of the book is devoted to the classification of plants, and since the plan is very different from that followed by all English and American works, the student will find it more profitable to study Gray's Text-Book or some similar English work.

LITERARY NOTES.

Scribner's Monthly is making extraordinary strides in its subscription list, keeping pace with remarkable improvements in a magazine which previously had appeared perfect of its kind.

A short serial by Mrs. Burnett, author of "That Lass o' Lowrie's," etc., will begin in the February *Scribner*. Meantime Mrs. Burnett is writing what promises to be her longest novel, for *Scribner's Monthly*. Its scene is laid in Washington. Mr. Cable's new serial, "Madame Delphine," will also begin in February, and run through three or four numbers. Mrs. Schayer's "Tiger-Lily" will be concluded in the January number.

In regard to the Christmas (December) *St. Nicholas*, we quote the following: " *St. Nicholas* for December will be a surprise to its young readers. Special effort has been made to glorify the Christmas season, and 35,000 extra copies, (making an edition of 105,000) are being published, to meet the anticipated orders from Santa Claus. The new decoration for the cover will be wintry and spirited. Among the greatly varied and profusely illustrated contents will be an operetta for young people called 'The Land of Nod,' in which six little sleepy-heads visit the marvelous place and see many wonders. The libretto is musical and vivacious verse, and the music is by Mr. Anthony Reiff and Mr. W. F. Sher-

win. Mr. Frank R. Stockton will contribute one of his droll and quaint fairy stories, and Mr. Washington Gladden describes 'A Christmas Dinner with the Man in the Moon.' A new feature of *St. Nicholas* will be begun. It is a 'Treasure-box of Literature,' whose value and purposes are indicated by the first contents, which will be reprints of Nathaniel Hawthorne's fantasy, 'David Swan,' and Thackeray's poem, 'King Canute.' Both are to be illustrated."

The Atlantic Monthly for 1881 will contain serial stories by Elizabeth Stuart Phelps, George P. Lathrop, W. H. Bishop, W. D. Howells, and Henry James, Jr. Short stories and sketches by Harriet Beecher Stowe, T. B. Aldrich, Sarah O. Jewett, Constance Fenimore Woolson, Mark Twain, Rose Terry Cooke, Ellen W. Olney. Essays on biographical, historical, and social subjects, by Goldwin Smith; Edward Everett Hale, on "The Social, Political, and Religious Life in the time of Christ"; William M. Rossetti, on "The Wives of the Poets"; John Fiske, on the "Early Culture, Myths, and Folk-Lore of our Aryan Ancestors"; Joseph Dugdale, on "The Relation of Society to Crime." The *Atlantic* contributors include Longfellow, Whittier, Holmes, Lowell, Hale, Whipple, Howells, Aldrich, Stedman, James, Warner, Waring, Fiske, White, Scudder, Bishop, Mark Twain, Mrs. Stowe, Miss Phelps, H. H., Miss Jewett, Miss Larcom, Miss Preston, Mrs. Cooke, Miss Woolson, Mrs. Thaxter, and many others of the best American writers.

