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The Educational Weekly.

TORONTO, FEBRUARY 26, 1885.

WE hear a great deal about *education* in these days. We do not often come across the word *tuition*. Writers and speakers are very fond of descending upon that unlimited subject, education. Tuition is oftentimes left out of view. Like moralists who continually discuss abstract ethics, forgetting meanwhile that right and wrong are matters of *hic et nunc*, belonging to the every-day duties of life, educationists are too fond of forming visionary theories about an ideal education, while the practical part of tuition is left to shift for itself.

Let us say a few words on tuition.

Primarily it signifies the art of instilling into the mind new facts, and endowing it with new powers. In this it differs from the word of wider meaning—education, into which many other factors, many of them of an ethical character, enter.

THE aim of tuition is to impart knowledge and wisdom. By knowledge we mean a store of remembered facts—the capital upon which the mind may trade, as it were; and by wisdom we mean here the power to trade with this capital—the power to apply remembered facts to the explanation of new cases.

If this view of the scope of tuition be correct, to what feature of the science of teaching should we pay more particular attention? Surely to the means by which knowledge may be turned into wisdom,—if we may adapt Tennyson's figure

"The drooping flower of knowledge changed to fruit
Of wisdom ;"

to the best way of so imparting facts as that they may be both most easily remembered and most easily utilized. How is this to be done?

THUS: excessive care must be taken not to "cram" the mind with unconnected truths, isolated facts, unarranged, ill-assorted rules. (Is not this, at bottom, the essence of "cram"?) Not indiscriminate heaps of coins (however golden) is the wealth with which to endow the youthful mind, but carefully classified and distributed riches. Not long lists of events, strings of almost unintelligible rules; but the influences of events upon each other, the relations of causes to effects; the interactions of analogous phenomena; the sequences of truths.

But how is this to be accomplished? The answer to this bears a twofold aspect: a psychological, and a logical. We may cement together that which we teach by

material either derived from the mind itself, or derived from the subjects presented to the mind. To be more explicit, we may have recourse to the emotions—wonder, curiosity, interest, or even ambition, shame, pity, indignation; or we may have recourse to the properties of the subject matters taught, by discovering their similarities and dissimilarities, their associations and disassociations, their order and classification, and so forth.

TRUE, these latter may, perhaps, and in all probability do, owe their efficacy in a great measure to their power of evoking emotions. But this, for the time being, may be left out of view without disturbing or vitiating our present position.

THESE two methods, and also a combination of them, must be used in the various stages of tuition. The first,—where we deal only with the mental faculties, in the lower forms of the public school, when the mind is unable to perceive objective relationships to any appreciable extent. A combination of both in the higher forms of the public school and the lower forms of the high school, when the mind begins to perceive objective relationships. The second,—where we employ logical processes, in the higher forms of the high schools and in the university, when the mental faculties, as far as the power to grasp a subject is concerned, are comparatively matured.

KEEPING in mind the value of bringing into play the emotions, our first object should be, first, to study these as they are evinced in our pupils; second, to invest everything we teach with a *parenchyma* of emotion-evoking material—with this caution: *that the emotions called up are normal in quantity and quality.*

IF we do this, our questions will not be the ceaseless "what?" "who?" "when?" but rather, "how?" "why?"

TO take an example: Let our readers just call to mind the interminable lists of (as they are usually taught) dry facts with which our geographies are filled to excess. What unpleasant labor—and, because unpleasant, wasteful labor—does the task of committing them to memory necessitate? Did master ever come across pupil that was truly and deeply *in love with area, population, boundaries, products, etc., etc., etc.*? And is not making our pupils in love with their studies one of the grand aims of tuition, and an aim that is of the very essence of the theory we are at present trying to inculcate?

LET us see now what change we can make in these geographical details by supplementing the "whats?" by the more important "hows?"

TAKE the subject of coast-line: who thinks of saying aught about this (apparently) uninteresting topic except that it is so-and-so; that it bears such-and-such ratio to the area; that it is, or is not indented; that it bears this or that proportion to the coast-line of this or that country;—merely adding perhaps drier concrete to dry concrete.

BUT with the use of our "hows?" and "whys?" what interesting facts may we not evoke!—Consider for a moment on what interesting shores such questions as these would land us. *How* does the coast-line affect the character, the habits, the means of gaining a livelihood, of the peoples that inhabit the shores and (in many instances) of the nation generally? *How* does it affect their food, their dress, their language, their treatment of strangers, their knowledge and use of foreign arts, literatures, and sciences, their enterprise, their martial or peaceful tendencies, their naval prowess, their colonizing propensities? And if the master is a reader of history, how *delightfully he could weave in with these*, many highly instructive *excursus* on the Greek and Roman colonies, on the Vikings, on the various influences upon English history of the insular position of

This precious stone set in the silver sea.

WE have, of course, carried this analysis to its extreme limits. Great care must be used in adapting questions of this description to the capabilities of the learners. Many a "how?" and "why?" could be asked to which no one could give an answer. All the "whats?" and "whens?" of the French Revolution anyone can learn. It requires a Carlyle or a Thiers to try an answer to the "whys?"

THUS much, then, of tuition as distinct from education. It forms a part of the teacher's duties which is kept more conspicuously before his mind than any other; it concerns his daily routine of work; it occupies his hourly attention; and affords him unlimited matter for consideration. To the young teacher above all, filled with inspiring and lofty ideas of education, the sometimes doubtless, irksome task of inculcating facts may, perhaps, by such considerations as we have touched on, be made more easy and pleasant, inasmuch as by eliciting interest in his pupils, he himself will be strengthened and encouraged.

Contemporary Thought.

A CORRESPONDENT of *The Nation* points out several inaccuracies in Bohn's translation of Schiller's *Maid of Orleans*.

AXEL GUSTAFSON writes on the temperance question under the title: *The Foundation of Death, a Study of the Drink Question*.

THE Senate of West Virginia has passed a bill admitting women to the State University, with a view to increasing the patronage of the institution. Surely a better reason than that could have been found.

THE Harvard University authorities have concluded to continue for the present the practice of Latinizing the names of students in the annual catalogues, despite the effort made to substitute plain English. Banks, however, still persist in requiring cheques to be signed in English.

AT the recent meeting of the German naturalists and physicians, at Magdeburg, Professor Landois, of Münster, spoke of the imperfections and comparative uselessness of most zoological gardens, and advised the institution of smaller gardens having well-defined fields of observation and investigation.

A PAPER by Mr. F. Cope Whitehouse, stating his reasons for believing Fingal's Cave in the Island of Staffa to be of artificial construction, accompanied by photographs illustrating his views, was presented to the French Academy of Sciences at its meeting of December 1st, by M. Daubrey, the geologist.

THE discussion of the question of "National Aid to Education," begun by Gen. John A. Logan, in the February issue of *The Chautauquan*, is concluded in the March number. General Logan ably argues for an annual appropriation of \$50,000,000 to educational purposes and shows conclusively how such an appropriation might be made and "not add one dollar to the taxes already imposed."

AT the meeting of the Society of Arts in December, Mr. W. H. Preece read a paper in which he stated that electric lighting is flourishing in America much more than in England. There are probably ninety thousand arc-lamps alight every night in the United States. He has found it a dismal experience to be transferred from the brilliantly illuminated avenues of New York to the dark streets of London.

DR. R. BRUDENELL CARTER has published a paper urging that the culture and improvement of the eye-sight should receive a share of the attention that is given to physical development in other directions. He believes that it is not school-life alone, but the general conditions of civilization that have diminished our capacity of vision, and cites instances of sharp sight and long sight in savages, that were not regarded as at all unusual, where white men were exceedingly dull of vision.

IN a late circular of information of the Bureau of Education (No. 4, 1884), containing the proceedings of the Department of Superintendence of the National Educational Association at Washington a year ago, are some remarks of Superintendent

Geo. J. Luckey, of Pittsburgh, on the subject of reading—of "readers," particularly. "It is painful to reflect," he says, "that the vast majority of our children, after spending seven or eight years of the best period of their lives in the school-room, have never read a book"—only the disconnected and half-intelligent scraps of the primary, first second, etc., even to sixth, readers. His remedy is a school circulating library.

IN the attitude of Emerson toward his own countrymen his personality is most interesting. With all his written and spoken words concerning America,—and it is impossible to read his *May Day* without perceiving how great a relief to him was the return of peace after the separating war,—one fails to find the evidence of any passionate devotion to his country. The occasional glimpses which Dr. Holmes gives of the poet on his travels in his own country serve to deepen the impression which one forms of the purely spectacular shape of the country in Mr Emerson's vision. He was not indifferent to the struggles going on, and yet they were rather disturbances to his spirit than signs of life which quickened his own pulse.—*March Atlantic*.

EDUCATION is not a mechanical art. It does not take a given amount of material, and by carving, cutting and joining, finally produce a wished product, as a house, a wagon, or a gun. It is more akin to agriculture, which stirs the soil, plants the seeds and directs the growths, or perhaps forestry, which trains the tree growths through a long series of years, furnishes us the best illustration of the teacher's work. It is not reasonable to ask at the close of each year that a certain number of finished scholars be shown, like the finished products of the work-shop. What we may reasonably look for is a steady growth of intelligence in the school population, and the constant appearance on the stage of a supply of intelligent citizens, and of educated men and women, to take up and carry on the work of society. If in each decade some positive advancement in the average education of the people, and some fair increase in the number of well educated persons can be shown, then the schools are justified, as a whole, in however many special cases they may have failed.—*The Present Age*.

ONE of the truest things ever written is the following from President Garfield's pen:—"It has long been my opinion that we are all educated, whether children, men, or women, far more by personal influence than by books and the apparatus of the school-room. The privilege of sitting down before a great, clear-headed, large-hearted man, and breathing the atmosphere of his life, and being drawn up to him and lifted up by him, and learning his methods of thinking and living, is, in itself, an enormous educating power." This reminds one strongly of that splendid passage in the *Sartor Resartus*:—"How can an inanimate gerund-grinder, the like of whom will, in a subsequent century, be manufactured in Nurnberg out of wood and leather, foster the growth of anything; much more of mind, which grows, not like a vegetable (by having its roots littered with etymological compost), but like a spirit, by mysterious contact of spirit; Thought kindling itself at the fire of living Thought? How shall he give kindling, in whose inward man there

is no live coal, but all is burnt out to a dead grammatical cinder? The Hinterschlag Professors knew Syntax enough; and of the human soul this much: that it had a faculty called Memory, and could be acted on through the muscular integument by appliance of birch-roads."

DR. J. D. ANDERSON, in *Education* for January-February, considers the aesthetic element in education. He holds it to be an essential duty for the teacher to inculcate an appreciation of the beautiful by both precept and example. He enlarges upon the good influence of attractive surroundings and insists that the aesthetic spirit should pervade everything in and about the school-room. Among some of the practical suggestions he makes is the following: "A teacher is not going out of the way of his duty if he corrects a boy for coming to school with unwashed hands or unkempt hair; or if he should draw attention to some defect in his dressing or clothing; if he should refer to an unbrushed jacket or a slovenly-put-on tie. All this comes within his jurisdiction, and he must adjudicate upon the delinquencies with all the soberness and gravity that such offences deserve." But this adjudication, it may be added, should be undertaken only by a teacher who is endowed with very sound judgment, exquisite discretion and a very warm heart. Children may be made altogether too prim, and neatness too severely enforced does not always conduce to cheerfulness in the school-room.—*The Current*.

A PROMINENT New England educator, Hon. A. P. Stone, of Springfield, Mass., severely criticises some of the present conditions of the public educational system. He says the greatest need of a large number of teachers is a knowledge of their business; that in very many cases pupils are taught to memorize instead of being led to a working understanding of fundamental principles. "There is no disguising the fact," he remarks, "that all along the educational horizon there is going on a contest between training and cramming; between independent and routine work." He regards it to be the chief duty of the teacher to make well-trained, self-raised men rather than produce mathematicians, chemists or literators. These views of the teacher's obligations to society have been so frequently expressed of late as to indicate a decided reaction against the machine system. The personality of the teacher himself is growing to be regarded as more and more important. That which was so good in the character of the old school-master of a long time ago is finding its proper appreciation. It seems to be the opinion of the best authorities that children cannot be coined like dollars.—*The Current*.

LAST year, when Mr. James Russell Lowell delivered the address at the unveiling of Fielding's bust at Taunton, it was remarked by the English papers that no Englishman could have discharged the duty so satisfactorily. Mr. Lowell's discourse at Taunton was properly a critical estimate of Fielding's genius. But at Birmingham he spoke of the genius of Democracy in a strain which has not been surpassed by any one who ever treated the theme. Such a discourse was an event, and an event without precedent. A Foreign Minister stating, in the country to which he is accredited, the most radical political views, and asserting that they are the ultimate logical result of the political constitution of the country in which he speaks, and which repudi-

ates such a conclusion, yet to do this with a temper, an urbanity, a moderation, a precision, and courteous grace which charm doubt into acquiescence, and wonder into a tribute of unfeigned admiration and acknowledgment of great service to political thought greatly done—this is surely an unprecedented event in the annals of diplomacy, and this is what Mr. Lowell did at Birmingham.—*G. W. Curtis, in Harper's Monthly.*

BUT there is one particular in this connection, the study of English, in which it is exceedingly to be regretted that not only has no advance been made but a positive retrogression appears to be going on. We refer to the methods by which English literature is studied and taught in by far the greater number of schools and colleges—University College, alas! not being an exception. It is distressing to any right-minded person to observe that the very name of English literature in academic language has become perverted. It means to the student mind a mere text-book in which Craik, or some other equally incapable individual, has set down certain facts and opinions which students are forced into learning under the monstrous delusion that they are thereby acquiring an education in English literature. . . . Is it impossible for them to see that it would be as rational to expect one of their students to learn swimming by reading works on hydro-dynamics, as to learn English literature by reading books filled mainly with petty details, not even about literature, but largely about the persons who made literature? . . . Moreover, what an education in intellectual dishonesty is acquired in this process of learning by rote the names and criticisms of books which the student never read! For critical knowledge has in itself no essential value whatsoever. It is only valuable so long as it indicates a familiar acquaintance with the works criticised, and in such a case its acquisition is a mere incident of the process of education. But when the pretension of critical knowledge has been made the essence of a system, let us not say of education but of cramming, the climax of folly has been reached, and it is quite reasonable to expect the consequences to be intellectually disastrous. . . . But college instructors in English (we mean not simply the professors who teach, but the examiners and members of Senate who "set the lessons") err not simply in the matter of their instruction, but even more grievously in the method adopted. It is the primary canon in respect to method, both in science and in philosophy, to proceed from the known to the unknown. Our instructors, however, prefer another method. They start from nowhere in particular and proceed in the same direction. And if they ultimately reach a place with the same designation—as they frequently do—is it to be wondered at? They might perceive, if they looked closely, that there can be no hopeful education without an awakening of interest in the mind of the learner, and that this can only be done by placing him in close contact first with the living, throbbing literature of his own day, whose kinship with his own spiritual life will soon assert itself and develop an intense interest in their common ancestry. This is the true condition of intellectual as well as of physical life and growth. There must be hunger before there can be healthy nourishing; any attempt at forcing will surely lead to intellectual dyspepsia.—*Varsity, February 21st.*

Notes and Comments.

THE January and February numbers of the *Chautauqua Young Folks' Journal* maintain the excellent character of this magazine. In them are continued "The Children of Westminster Abbey;" "Souvenirs of my Time;" "Entertainments in Chemistry;" "Boys' Heroes;" "The Making of Pictures;" "The Temperance Teachings of Science;" etc.

VOLUME two of Cassell's *Greater London*, by Edward Walford, is nearly ready. This completes a most interesting and valuable narrative of the wonderful city on the Thames. The map and engravings that accompany the book are an attractive feature, and make it invaluable to those persons who want to know London as she is and has been for so many years.

AMONGST the periodicals we welcome the March numbers of the *Magazine of Art*—a treasure house of both light and serious reading embellished with delightful illustrations; the *Atlantic Monthly*—in which appears Dr. Oliver Wendell Holmes' opening of "The New Portfolio"; and the *Popular Science Monthly*—replete with articles, of interest not to lovers of science only.

THE *Popular Science Monthly* owes its presence on our table to the courtesy of the publishers, J. Appleton & Co. A large proportion of its contents are somewhat technical; as, for example, "The Darwinian Theory of Instinct," by G. J. Rumanes; "Medical Expert Testimony"; "How Fungi Live in Winter"; "Cholera;" "Painless Extinction of Life;" "The Accurate Measurement of Time;" etc.

PROFESSOR HUTTON, of University College, Toronto, is to deliver, on Monday next, a lecture on Plutarch. Those who had the pleasure of hearing Professor Hutton lecture on the *Antigone* of Sophocles will, doubtless, look forward with anticipations of pleasure to an opportunity of listening to him again. We wish heartily that others of the large body of professors in Toronto would follow this example and extend their influence beyond the limits of the lecture room to the walls of a public hall.

THE sentence, "A two storey education cannot be constructed on a one storey head," our Indianapolis namesake tells us, was dropped by a Mr. T. F. Davidson, in an address to the teachers of Fountain County. Epigrammatic utterances always bear an aspect of truth, but it is very necessary to get rid of the "soufflée of superciliousness" before examining the "truffle of truth" which, some one has said, every epigram contains. Provided the foundation were strong enough, possibly an any numbered "storey

education" could be raised. If we were tempted into epigram, we should be inclined to describe education as the trunk of the tree, culture its branches, refinement the blossoms, and taste their perfume.

IT would be interesting to discover whether the views we have given expression to in the article commencing this number are not founded upon, and elucidated by, pure psychological principles; whether, namely, it could not be proved that every act of cognition is accompanied by a feeling—pleasant, painful, or neutral. Take the act of committing to memory the multiplication table: is the series of cognitions fixed in the mind by means of repetition only? or does the repetition merely give the mind time to call up feelings—feelings evoked by the perception of interesting ratios, symmetrical form, rhythmical sounds, which connect together the various cognitions and enable the mind to call up any one cognition, when any other connected one is presented to it?

THE *Atlantic Monthly* for March is an unusually spirited number. Dr. Holmes here definitely opens his "New Portfolio." Besides the three serials by Mrs. Oliphant, Miss Jewett, and Mr. Craddock, there are several papers of value. The chief of these is a sketch by Clara Barnes Martin, called "The Mother of Turgeneff," which gives a curious account of the early influences which surrounded the great novelist, and a strikingly vivid but not altogether pleasing picture of Russian home-life some fifty years ago. "Time in Shakespeare's Comedies," by Henry A. Clapp, and "The Consolidation of the Colonies," by Brooks Adams, a realistic story by Bishop, called the "Brown-Stone Boy," and a Mexican travel paper, with the title of "A Plunge into Summer," by Sylvester Baxter, complete the longer articles of the number.

WE hear that a new work called *An Introduction to the Study of the Compounds of Carbon, or Organic Chemistry*, by Prof. Ira Remsen, Johns Hopkins University, Baltimore, is soon to appear. It is intended to meet the wants of the students in our scientific schools, schools of technology, and colleges, and of medical students. It is, perhaps, rather more elementary than most of the existing small books on the subject, and is hence, it is believed, better adapted to the classes of students mentioned. The attempt has not been made to describe or even mention most of the compounds of carbon, but all which are of real importance to the beginner are treated of with some degree of fulness. Full directions are given for making a number of typical compounds, by methods quite within the reach of every chemical laboratory, so that with the aid of the book a systematic course of laboratory works on carbon compounds may be carried on.

Literature and Science.

THE BALLAD OF AGINCOURT.

MICHAEL DRAYTON.

MICHAEL DRAYTON was born in Warwickshire about the year 1593. He was a most voluminous writer, and is best known for his *Polyolbion*, an extensive description of England.

FAIR stood the wind for France,
When we our sails advance,
Nor now to prove our chance
Longer will tarry;
But putting to the main,
At Caux, the mouth of Seine,
With all his martial train,
Landed King Harry.

And taking many a fort,
Furnished in warlike sort,
Marcheth towards Agincourt
In happy hour :
Skirmishing day by day,
With those that stopped his way,
Where the French gen'ral lay
With all his power.

Which in his might of pride,
King Henry to deride,
His ransom to provide
To the king sending.
Which he neglects the while,
As from a nation vile,
Yet with an angry smile
Their fall portending.

And turning to his men,
Quoth our brave Henry then,
Though they be one to ten,
Be not amazed.
Yet have we well begun,
Battles so bravely won,
Have ever to the sun
By fame been raised.

And for myself (quoth he),
This my full rest shall be,
England ne'er mourn for me,
No more esteem me.
Victor I will remain,
Or on this earth be slain,
Never shall she sustain
Loss to redeem me.

Poitiers and Cressy tell,
When most their pride did swell,
Under our swords they fell,
No less our skill is,
Than when our grandsire great,
Claiming the regal seat,
By many a warlike feat
Lopped the French lilies.

The Duke of York so dread
The eager vaward led,
With the main, Henry sped,
Amongst his Frenchmen.
Exeter had the rear,
A braver man not there,
O Lord, how hot they were,
On the false Frenchmen !

They now to fight are gone,
Armor on armor shone,
Drum now to drum did groan,
To hear, was wonder ;
That with the cries they make,
The very earth did shake,
Trumpet to trumpet spake,
Thunder to thunder.

Well it their age became,
O noble Erpingham,
Which didst the signal aim
To our hid forces :
When from a meadow bye,
Like a storm suddenly,
The English archery
Stuck the French horses

With Spanish yew so strong,
Arrows a cloth yard long,
That like to serpents stung,
Piercing the weather :
None from his fellow starts,
But playing manly parts,
And like true English hearts,
Stuck close together.

When down their bows they threw,
And forth their bilbos drew,
And on the French they flew,
Not one was tardy.
Arms were from shoulders sent,
Scalps to the teeth were rent,
Down the French peasants went,
Our men were hardy.

This while our noble King,
His broad sword brandishing,
Down the French host did ding,
As to o'erwhelm it.
And many a deep wound lent,
His arms with blood besprent,
And many a cruel dent
Bruised his helmet.

Gloucester, that Duke so good,
Next of the royal blood,
For famous England stood,
With his brave brother ;
Clarence, in steel so bright,
Though but a maiden knight,
Yet in that furious fight
Scarce such another.

Warwick in blood did wade,
Oxford the foe invade,
And cruel slaughter made,
Still as they ran up :
Suffolk his axe did ply,
Beaumont and Willoughby,
Bare them right doughtily,
Ferrers and Fanhope.

Upon Saint Crispin's day,
Fought was this noble fray,
Which fame did not delay
To England to carry ;
O when shall Englishmen,
With such acts fill a pen,
Or England breed again
Such a King Harry ?

THE FAIRY LAND OF SCIENCE.

MISS A. B. DUCKLEY.

(Continued from last issue.)

Now, phosphoric acid melts in water just as sugar does, and in a few minutes these fumes will disappear. They are beginning to melt already, and the water from the pan is rising up in the bell-jar. Why is this? Consider for a moment what we have done. First, the jar was full of air, that is, of mixed oxygen and nitrogen; then the phosphorus used up the oxygen, making white fumes; afterwards, the water sucked up these fumes; and so, in the jar now nitrogen is the only gas left, and the water has risen up to fill all the rest of the space that was once taken up with the oxygen.

We can easily prove that there is no oxygen now in the jar. I take out the cork and let a lighted taper down into the gas. If there were any oxygen the taper would burn, but you see it goes out directly, proving that all the oxygen has been used up by the phosphorus. When this experiment is made very accurately, we find that for every pint of oxygen in air there are four pints of nitrogen, so that the active oxygen-atoms are scattered about, floating in the sleepy, inactive nitrogen.

It is these oxygen-atoms which we use up when we breathe. If I had put a mouse under the bell-jar, instead of phosphorus, the water would have risen just the same, because the mouse would have breathed in the oxygen and used it up in its body, joining it to the carbon and making a bad gas, carbonic acid, which would also melt in the water, and when all the oxygen was used the mouse would have died.

Do you see now how foolish it is to live in rooms that are closely shut up, or to hide your head under the bed-clothes when you sleep? You use up all the oxygen-atoms, and then there are none left for you to breathe; and besides this, you send out of your mouth bad fumes, though you cannot see them, and these, when you breathe them in again, poison you and make you ill.

Perhaps you will say, If oxygen is so useful, why is not the air made entirely of it? But think for a moment. If there was such an immense quantity of oxygen, how fearfully fast everything would burn! Our bodies would soon rise above fever heat from the quantity of oxygen we should take in, and all fires and lights would burn furiously. In fact, a flame once lighted would spread so rapidly that no power on earth could stop it, and everything would be destroyed. So the lazy nitrogen is very useful in keeping the oxygen-atoms apart; and we have time, even when a fire is very large and powerful, to put it out before it has drawn in more and more oxygen from the surrounding air. Often, if you can shut a fire into a closed space, as in a

closely-shut room or the hold of a ship, it will go out, because it has used up all the oxygen in the air.

So, you see, we shall be right in picturing this invisible air all around us as a mixture of two gases. But when we examine ordinary air very carefully, we find small quantities of other gases in it, besides oxygen and nitrogen. First, there is carbonic acid gas. This is the bad gas which we give out of our mouths after we have burnt up the oxygen with the carbon of our bodies inside our lungs; and this carbonic acid is also given out from everything that burns. If only animals lived in the world, this gas would soon poison the air; but plants get hold of it, and in the sunshine they break it up again, as we shall see in Lecture VII., and use up the carbon, throwing the oxygen back into the air for us to use. Secondly, there are very small quantities in the air of *ammonia*, or the gas which almost chokes you in smelling-salts, and which, when liquid, is commonly called "spirits of hartshorn." This ammonia is useful to plant as we shall see by-and-by. Lastly, there is a great deal of water in the air, floating about as invisible vapor or water-dust, and this we shall speak of in the next lecture. Still, all these gases and vapors in the atmosphere are in very small quantities, and the bulk of the air is composed of oxygen and nitrogen.

Having now learned what air is, the next question which presents itself is, Why does it stay round our earth? You will remember we saw in the first lecture, that all the little atoms of a gas are trying to fly away from each other, so that if I turn on this gas-jet the atoms soon leave it, and reach you at the farther end of the room, and you can smell the gas. Why, then, do not all the atoms of oxygen and nitrogen fly away from our earth into space, and leave us without any air?

Ah! here you must look for another of our invisible forces. Have you forgotten our giant force, "gravitation," which draws things together from a distance? This force draws together the earth and the atoms of oxygen and nitrogen; and as the earth is very big and heavy, and the atoms of air are light and easily moved, they are drawn down to the earth and held there by gravitation. But for all that, the atmosphere does not leave off trying to fly away; it is always pressing upwards and outwards with all its might, while the earth is doing its best to hold it down.

The effect of this is, that near the earth, where the pull downward is very strong, the air-atoms are drawn very closely together, because gravitation gets the best in the struggle. But as we get farther and farther from the earth, the pull downward becomes weaker, and then the air-atoms spring farther apart, and the air becomes thinner.

But the chief reason why the air is thicker or denser nearer the earth, is because the upper layers press it down. If you have a heap of papers lying one on top of the other, you know that those at the bottom of the heap will be more closely pressed together than those above, and just the same is the case with the atoms of the air. Only there is this difference, if the papers have lain for some time, when you take the top ones off, the under ones remain close together. But it is not so with the air, because air is elastic, and the atoms are always trying to fly apart, so that directly you take away the pressure they spring up again as far as they can.

I have here an ordinary pop-gun. If I push the cork in very tight, and then force the piston slowly inwards, I can compress the air a good deal. Now I am forcing the atoms nearer and nearer together, but at last they rebel so strongly against being more crowded that the cork cannot resist their pressure. Out it flies, and the atoms spread themselves out comfortably again in the air all around them. Now, just as I pressed the air together in the pop-gun, so the atmosphere high up above the earth presses on the air below and keeps the atoms closely packed together. And in this case the atoms cannot force back the air above them as they did the cork in the pop-gun; they are obliged to submit to be pressed together.

Even a short distance from the earth, however, at the top of a high mountain, the air becomes lighter, because it has less weight of atmosphere above it, and people who go up in balloons often have great difficulty in breathing, because the air is so thin and light. In 1804 a Frenchman, named Gay-Lussac, went up four miles and a half in a balloon, and brought down some air; and he found that it was much less heavy than the same quantity of air taken close down to the earth, showing that it was much thinner, or rarer, as it is called; and when, in 1862 Mr. Glaisher and Mr. Coxwell went up five miles and a half, Mr. Glaisher's veins began to swell, and his head grew dizzy, and he fainted. The air was too thin for him to breathe enough in at a time, and it did not press heavily enough on the drums of his ears and the veins of his body. He would have died if Mr. Coxwell had not quickly let off some of the gas in the balloon, so that it sank down into denser air.

And now comes another very interesting question. If the air gets less and less dense as it is farther from the earth, where does it stop altogether? We cannot go up to find out, because we should die long before we reached the limit; and for a long time we had to guess about how high the atmosphere probably was, and it was generally supposed

* 100 cubic inches near the earth weighed 31 grains, while the same quantity taken at four and a half miles up in the air weighed only 12 grains, or two fifths of the weight.

not to be more than fifty miles. But lately, some curious bodies, which we should have never suspected would be useful to us in this way, have let us into the secret of the height of the atmosphere. These bodies are the *meteors*, or *falling stars*.

Most people, at one time or another, have seen what looks like a star shoot right across the sky, and disappear. On a clear starlight night you may often see one or more of these bright lights flash through the air; for one falls on an average in every twenty minutes, and on the nights of August 9th and November 13th there are numbers in one part of the sky. These bodies are not really stars; they are simply stones or lumps of metal flying through the air, and taking fire by clashing against the atoms of oxygen in it. There are great numbers of these masses moving round and round the sun, and when our earth comes across their path, as it does especially in August and November, they dash with such tremendous force through the atmosphere that they grow white-hot, and give out light, and then disappear, melted into vapor. Every now and then one falls to the earth before it is all melted away, and thus we learn that these stones contain tin, iron, sulphur, phosphorus, and other substances.

It is while these bodies are burning that they look to us like falling stars, and when we see them we know that they must be dashing against our atmosphere. Now if two people stand a certain known distance, say fifty miles, apart on the earth, and observe these meteors and the direction in which they each see them fall, they can calculate (by means of the angle between the two directions) how high they are above them when they first see them, and at that moment they must have struck against the atmosphere, and even travelled some way through it, to become white-hot. In this way we have learnt that meteors burst into light at least 100 miles above the surface of the earth, and so the atmosphere must be more than 100 miles high.

Our next question is as to the weight of our aerial ocean. You will easily understand that all this air weighing down upon the earth must be very heavy, even though it grows lighter as it ascends. The atmosphere does, in fact, weigh down upon land at the level of the sea as much as if a 15-pound weight were put upon every square inch of land. Every square inch of this paper is bearing a weight of 15 lbs. on its surface. But how, then, comes it that I can lift it so easily? Why am I not conscious of the weight?

(To be continued.)

WATERDOWN High School has at present an attendance of over 75 pupils, a larger number than ever in its history.

Educational Opinion.

ENGLISH IN PUBLIC SCHOOLS.

ON the following extracts from the EDUCATIONAL WEEKLY for January 29, I propose to base a few remarks on the above subject:—

The importance of this (High School Entrance) examination can hardly be over-estimated, for it, more than any other provincial examination, directs the tendency of the teaching in the public schools. (p. 50.)

Another by no means unimportantly beneficial result that will undoubtedly accrue (from the greater prominence given to English as compared with Greek and Latin), is that we shall be able to study a work or an author in our own language, *as a whole*. (p. 65.)

If, then, we are right in this view, the subjects that should most engage the attention of young teachers are the English language and literature, with all the interesting connecting links without which English itself cannot be properly understood or taught. (p. 65.)

With the views embodied in these extracts I fully agree. Just because the High School Entrance Examination exercises so much influence on public schools it should be made as perfect a standard as possible. Just because English, as a school and college subject, is annually becoming more important, the greatest care should be taken to have English taught to the best advantage in public schools. Just because the best way to study English is to take up some work *as a whole*, the time of teachers and pupils in the public schools should be devoted as much as possible to this kind of work.

How is it now? Instead of some whole work in English for the Entrance Examination we have a batch of passages in prose and verse, not one of which is of any length, and most of which have neither beginning nor end. Instead of learning to use the English language with facility and accuracy the pupils learn an infinite number of facts, mostly useless, about the language, and these they forget as soon as they leave school, if not before. Instead of learning to speak correctly, as regards both syntax and orthoepy, they are compelled to waste hundreds of precious hours in committing to memory the capricious sequence of letters which on the *lucus a non lucendo* principle we dignify with the term orthography.

How are we to account for the fact that after a pupil enters the high school he is allowed to begin the study of literature in a rational manner, while he is by departmental regulation carefully debarred from this delightful and profitable exercise in the previous part of his course? If it is good for the pupil to read Irving's "Rip Van Winkle," or Goldsmith's "Deserted Village," or Macaulay's essay on "Warren Hastings," or Coleridge's "Ancient Mariner," in the junior class of the high school, surely it is good for him to read Scott's "Lady of the Lake," or Longfellow's "Evangeline," or some suitable prose work, as a whole, in the senior class of the

public school. The great evil of multiplying texts for any one examination is the opportunity afforded to unwise examiners and teachers to wander off into what is called "side reading"—biography, bibliography, history, archaeology, and the whole circle of sciences. The best way to minimize this tendency is (1) to prescribe as few authors and works as possible for each examination, and (2) to change them as often as possible. If instead of excerpts from the fourth readers for the Entrance Examination the Department would prescribe whole works in prose and verse and change them yearly, the boys and girls in our public schools would have a chance before leaving them to acquire a taste for sound literature and to learn how to read with pleasure the great master-pieces of their mother tongue.

And what about the teachers? Many of them are, no doubt, so studiously inclined that they will always find time for private reading, but many of them have neither the time nor the inclination to devote themselves to even English literature outside of their school work. Obviously, then, it would be a benefit to them to have the programme so changed that their school work would be made to include literature in the true sense of the term. Under the plan I have suggested above, a teacher would be compelled to master for himself at least two new works each year, one in prose and one in verse, whereas under the present absurd system he is confined for, say, ten years to the same narrow treadmill round of disconnected passages. As reasonably expect a man to comprehend the beauty and significance of a splendid edifice by examining a brick taken from one of its walls, or of an opera or oratorio by hearing a single strain of the music, as expect the teacher to learn to appreciate Shakespeare's "Hamlet" by reading Hamlet's soliloquy, or Milton's "Paradise Lost" by reading the hymn in the Garden of Eden.

An incidental advantage of the plan I advocate would be that no school reader, made up of extracts, would be required above the third, and there ought to be none. The object of a graded series of extracts is to train the pupil to recognize words when he sees them, and to utter them correctly not only by themselves but as parts of connected discourse. Both kinds of training can be sufficiently secured, so far as graded extracts are useful as an instrument, by the time the pupil has finished his third book, if not sooner; after that it is better for him, for the teacher, and for the public, to have no graded reader at all. The enterprise of publishers in Canada, England, and the United States may be trusted to keep the price of editions of prescribed literature down to a minimum, and many of these editions already issued are marvels of cheapness and beauty. The whole of a pupil's school reading for a year need not cost more than twenty or twenty-five cents, if the texts are published without

notes, and no wise teacher of English will ever allow his pupils to use annotated texts if he can get any other. The most valuable part of their training in this subject will be obtained in the effort to reach without aid the meaning of the author.

I am well aware that the above view of my subject is not prevalent, and to many it may appear startling. I am perfectly convinced, however, of its soundness, and no intelligent observer can fail to see that it is making headway. Already we find whole works driving books of extracts out of the common schools of the United States, and the enterprise of publishers diverted from the production of advanced readers to the production of literary texts in cheap form. I for one will be deeply chagrined if our Province, with its boasted educational system, is allowed to lag far behind. Why should we not rather lead the way?

J. M. Houston

SPELLING REFORM.

Paper read at the Teachers' Institute, County of Peterborough, February 6th, 1885.

It is generally admitted by foreigners that as far as ordinary reading and speaking is concerned, the English is one of the most easily acquired of all languages. That this must be the case is evident from the fact that our language has no elaborate system of delusive and artificial genders, which constitute such difficulties in the study of Latin, Greek or German.

Should, however, the foreigner desire to go further and to enter upon the domain of English idioms, pronunciation and spelling, he will find a thousand difficulties on every side. That the orthography of our mother tongue is anomalous and erratic, is only half the indictment: it is also deficient and redundant. Instances are unnecessary: such words as "cough," "through," "colonel," "phthisis," "lieutenant," are not the most difficult examples in the English spelling book.

The dark-eyed Spanish lad, as with his pen he fashions the stately words of old Castile, laughs to scorn the idea of a spelling book. The English boy, on the contrary, looks forward with quaking heart to the spelling ordeal. The distinction between the two languages cited is simply this: the sonorous tongue of Spain is, with a slight intermixture of Moorish, a lineal descendant of the Latin; the language of England is a medley of Saxon, Latin, Norman, Greek and many another. All this intermingling has gone on, moreover, while the old alphabet has remained the means of expressing in visible signs the spoken sounds. Not that no changes, eliminations or additions have occurred in their symbols during the course of time.

But, in the main, the old letters have remained to our own day, to represent, presumably upon phonetic principles, the words of spoken English.

We cannot do better than quote, in some parts verbatim, the remarks of Dr. Fowler upon the origin of the present English alphabet. This writer says:

"The English alphabet was not invented to express the phonetic elements and combinations of the English language. It was derived from the Phœnician alphabet, of which the Hebrew is a type. Modified to express the sounds of the Greek language, it became the Greek alphabet. This, in turn, was modified to express the sounds of the Latin language, and thus became the Roman alphabet. This, in turn, was modified to express the sounds of Anglo-Saxon language, and thus became the Anglo-Saxon alphabet. This was modified to express the sounds of the English language, and thus became the English alphabet; with all its defects. In the stages of progress from oral communication to writing, picture writing probably came first. In this way the ancient Mexicans transmitted the memory of the most important transactions of their Empire. The next in order were hieroglyphics, which, like pictures, were the signs of things, or ideographic signs, though some of them were the signs of the spoken language. Thus, ingratitude was indicated by a viper, and wisdom by an ant. The next step in the progress was the use of syllabic characters, employed as signs of sounds, and not of things. Letters representing the elementary sounds in the language constitute the final stage of improvement in the communication of thought by visible signs. When and where letters took their origin is not known. The Egyptians paid divine honors to the inventor of letters under the name of Theuth. The common opinion is that Cadmus, a Phœnician, who settled in Bœotia and founded Thebes, introduced letters into Greece about 1493, B.C. The signs introduced by Cadmus numbered 16. Eight others were afterwards added, to express, probably, sounds in the Greek, but not in the Phœnician language, of which eight, four were added by statute at Athens in 403, B.C. Some of the Phœnician characters, moreover, we employed with new powers or changed powers, while the form of the letters was also modified.

"The Roman alphabet was derived from the Greek. A part only of the alphabet was at first introduced, but afterwards other letters were brought in. The Romans dropped certain letters that were not needed; used certain letters with new powers; and introduced certain new letters. For example, the letter *theta* (or *th*, the want of which we so much feel) was discarded; the *eta* (or long *e* of the Greeks) was used with a new force, (that of *h*); the letter *q* was introduced.

"The Anglo-Saxon alphabet was derived mainly from the Roman, from which is

differed by certain additions, emissions and modifications. For example, it had the sign for *th*, which the Roman alphabet had not; it had the letter *c*, which the Roman had, but the Greek had not; it had the letter *j* with the sound of *y* (as in German), or *zh* (as in French), or *dzh* (as in English), which is not in the Latin or the Greek.

"Under the influence of the Norman French, the Anglo-Saxon alphabet underwent some changes. The sound system of the former language derived from the Latin, bore a greater resemblance to that of the Roman than to that of the Gothic tongues. As the result of this, the two signs for *th* (hard and soft, as in *the* and *thin* respectively) were omitted; and other letters were slightly changed."

The alphabet received from the Anglo-Saxon, modified by the Normans, underwent some other modifications, until a comparatively late period. For example, *j* was introduced in Cromwell's time, and is simply the *i* with a tail; *u* was obtained from *v* by making the latter round at the bottom, and was used as a separate letter after 1630; *w* was made by doubling the *v*.

Such being a sketch in brief of the origin of our present alphabet, what wonder that anomalies abound, and difficulties beset not only foreigners, but also English-speaking people themselves!

An alphabet, in order to be perfect, should conform to the following requirements: (1) Every sound should have its own sign; (2) no sign should stand for more than one sound; (3) sounds resembling one another should be represented by somewhat similar signs; while sounds differing widely from one another should be represented by widely differing signs.

Tried by this standard, then, the English alphabet is deficient; it is redundant; it is inconsistent; it is unsteady; it is inconvenient in learning other tongues. It is deficient, in that there are not enough signs to represent the various sounds; *i. e.*, the same sign stands for several distinct sounds; *e. g.*, the letter *a*, which has four sounds. It is redundant, in that certain letters are superfluous, *viz.*: *c*, *q*, *x*; which have the sounds already appropriated by other letters. It is inconsistent, in that sounds resembling one another are not represented by letters resembling one another; *e. g.*, the sound *f* is very much like the sound *v*, yet the letter *f* bears no resemblance to *v*. It is unsteady, inasmuch as the same letter represents, at different times, entirely distinct sounds; *e. g.*, *g* and *x*. It is inconvenient in learning the other modern languages, in that these languages all agree in the sounds of many letters (especially vowels), which the English has a pronunciation of its own. For example: in German, French, Italian, etc., *a* has the broad sound *ah*, *i* has the full sound *ee*, while English alone gives these letters the sounds *a* and *i*. In a word, there

are 36 separate and distinct sounds in spoken English, while there are but 23 effective signs in the way of letters. The result is that, while no alphabet is absolutely perfect, yet it must be confessed that in its practical application, the English alphabet is the worst of all.

To remedy these defects, what are called orthographical expedients are resorted to. Among these may be mentioned the doubling of the vowels to lengthen their sound, as in *meet*, as distinguished from *met*, an expedient introduced very early in the history of the English language; the use of diphthongs, as *oi*, *ow*; the addition of a silent *e*, to lengthen a preceding vowel, as in *shade*, as distinguished from *shad*; the addition of a silent consonant at the end of a syllable, for the same purpose, as in *climb*; the doubling of a consonant, to shorten a preceding vowel, as in *better*; the use of *u* to harden a preceding *g*, as in *rogue*.

But still, with all these expedients, our spelling is so utterly irregular and anomalous, that the advice generally given to learners is not to remember the sounds of the words, but to remember the forms of the words. That is, he is the best speller who has the greatest number of irregularities and anomalies fixed in his memory.

But many persons, recognizing the fact that the very *raison d'être* of an alphabet should be the representation by visible signs of the sounds of words, and that the present alphabet is entirely unfitted for the purpose, have gone further, and proposed sweeping changes in our orthography, still in the main retaining it. In all these proposals, two general principles have been adhered to, in a greater or a less degree. The first is, discard all superfluous letters from our present alphabet; the second, to introduce additional letters.

Other spelling reformers have gone still further and have advocated the construction of a totally new alphabet, consistent with true phonetic principles. It is hardly necessary to say that the most sweeping of all these attempts is that known as phonography, stenography or shorthand. Not that the primary object of the pioneers of shorthand was the reformation of the English spelling for its own sake. Their aim was to bring the operations of the mind and of the hand into closer correspondence; *i. e.*, to enable the movements of the hand to approximate in rapidity to those of the speaker's lips. To do this, it was necessary that an entirely new alphabet should be invented; for, even if the present one had been perfect in other respects, the letters require so much time in their formation, that it would have been utterly impossible with them to attain the requisite speed.

(To be continued.)

J. H. Long

TORONTO:

THURSDAY, FEBRUARY 26, 1885.

TWO ESTIMATES OF EDUCATION.

THERE are two ways of estimating the value of the study of a subject, both proper, both right—not necessarily mutually exclusive, though often, by writers on educational topics, made to appear so.

One educationist will estimate a subject of study in respect simply of its value to the pupil when grown to manhood, as a wage-earning, bread-winning property. Another will estimate it in respect of the mind-power which it develops; and hence lay particular stress upon the educative process, by which it is made a part of the pupil's mental equipment.

For example: the study of grammar is, in the judgment of one, useful, only because it enables a pupil to write and speak correctly; by whatever method this can be most quickly effected, that method is the best. The end aimed at is the capability of directly applying what has been learned to actual use. The power of correct speech and the ability to write correctly, are valuable possessions; few are more so. Hence grammar, they say, should be studied at school; but for the ends above mentioned alone.

But in the judgment of another, the ability to speak and write correctly is not of more educative importance than the true process of developing that ability. Knowledge must not be empirical alone; it must be based on law, reason, judgment, induction. One should not know merely how to write well and speak properly, but *why* he writes well and *why* he speaks properly. In other words, he must understand the *laws* of language, and his knowledge must be certain, clear, well apprehended, verified, exact. In the one estimation, the end sought for is the only thing of importance, in the other, not only this, but the mental training which has made knowledge rational and not empirical.

The settlement of the relative claims of these estimates is one of the most difficult problems of modern pedagogy. The reason of this lies in the very great comprehensiveness and complexity of modern knowledge, and the impossibility of deciding to the satisfaction of all minds, what branches of knowledge shall be put in the curriculum of studies for schools.

If but one or two subjects were to be taken up in school, there would be no difficulty. For example, if reading and grammar were the only subjects of a school course, there would be no reason why grammar should not be taught so that every pupil of fair ability should not only speak and write with correctness, but also have that training of the faculties which would make his knowledge rational,—based on reason and judgment. But when to reading and writing must be added arithmetic, and spelling (no small matter in our language), and geography, and history, and some knowledge of literature and science, the problem becomes one of immense difficulty.

This difficulty is increased again, by the diversity of the pupils in respect of ability, social position, the time during which they are to remain at school, and the regularity of their attendance. In a public school system, a law of average must be followed; and when we say that the public school system of this Province must provide for pupils who, in the average, are only of fair ability, who cannot remain at school longer than their thirteenth or fourteenth year, who then must take up some trade, or at most enter some shop or office as clerk, and who, for a number of reasons, cannot attend quite regularly, we have taken, as we believe, a true position.

This being so, the question remains: what sort of curriculum should be laid down? It seems to us, that to one who recognizes these circumstances, the answer will be: the course must be laid down primarily with reference to its usefulness as knowledge-giving, ability-imparting. The next question will be, what are those branches of knowledge most necessary, and which in themselves are ability-imparting. The answer must be, as it has been for hundreds of years: first, reading; second, writing; third, arithmetic.

Of these, the most important is undoubtedly reading. Both quality and quantity should be looked for. A child should not only read well, but much. It is easy to secure wide and various reading in children, if they are properly directed, and stimulated with judgment. The school reading should not be confined to the ordinary reading-books: but supplementary reading, of interesting and informing character, should be largely taken up.

To write well is the next requisite. We shall have a good deal to say on this sub-

ject, again. But meanwhile, we cannot insist too strongly upon the necessity of having every child become a good writer while young. The discipline necessary is good, both for mind and hand. A clear, free, easily legible hand, perfectly regular, and free from tawdry ornament, is as rare as it is desirable.

The next requisite is arithmetic—a subject that has been more mistaught and been made the cause of more heartaches, than all others in the school course combined. What is wanted, and what alone is wanted, is such a knowledge of numbers, as will enable one to make the ordinary calculations of life quickly and accurately. The great fault in the teaching of arithmetic has been, that it has been taught abstractly, and not concretely. From the time the child first learns to count till it leaves school, (*i.e.*, the ordinary child), it should use numbers in constant conjunction with things; things that it can see, feel, handle;—or that it knows something definite about. If one half of what is usually taught in arithmetic, and propounded in examination papers on the subject, were excised for ever, the world would be a great deal happier, and none the less wise.

After these three comes the study of language as a means of expressing thoughts correctly, both in speech and by writing,—whether this be done by the study of "composition," as it is usually called, or by the study of grammar, or by a combination of these two,—the one thing necessary is: power to use the language correctly.

We shall not extend our curriculum further just now, because we wish to insist on the primary importance of the subjects already named. Other things are good but not *so* good as these. Of course some things must be added, but upon them a lesser stress must be laid.

Now, if the curriculum were made thus simple, restricting the subjects of it to those which are directly useful to the actual life of the great mass of our population, and which can be acquired during the short period of their school days, there would still be time and opportunity left for making this knowledge, especially to the brighter and more regularly attending pupils, not mere matter of memory and experience, but knowledge based upon reason and judgment, and derived by induction from things which had been observed, examined, and compared.

BOOK REVIEW.

Methods of Teaching History, being vol. 1. of the *Pedagogical Library*, edited by G. Stanley Hall. Second edition, entirely recast and rewritten. Boston: Ginn, Heath & Co.

THE first edition of this book was largely made up of a translation of Dr. Diesterweg's monograph; but the editor has wisely omitted it in the second edition, and in its place substituted contributions from eminent English and American teachers of history, who understand the drift of English and American thought, and the practical character of the English and American people.

The editor recognizes the value of the study of history in determining individual and national character, and his collaborators are at one with him in their estimate of the importance of history as a factor in mind training. When it is said that the various papers making up the book are from teachers of such eminence as, amongst others, Professor J. R. Seeley, of Cambridge University, President White, of Cornell University, and the professors of history in Harvard, Johns Hopkins, Michigan, and Wisconsin universities, it will be conjectured that advanced views and strong opinions will be expressed. The experience of these gentlemen being obtained mainly in the lecture-room of the college rather than at the desk of the school, we should naturally expect the book more suited to the college professor, or the instructor in the high school than to the public school teacher. While this is true, there is a vast deal of stimulating thought throughout the whole book, which cannot but help even the teacher of the smallest children. In fact it is in the teaching of these that the greatest changes are proposed—changes which individual educators have agreed to again and again, from Pestalozzi and Froebel downwards, but which teachers as a body have not been able to carry out:—as, for example, the infusing of a historic spirit into the minds of children by the systematic relation of wonder-myths, legends, hero-biographies, adventure-tales, and so on, telling and retelling them again and again, and requiring the children to reproduce them, bit by bit, over and over, drawing from them moral and religious truths, character traits, and conduct precepts, and making them the vehicle for the conveyance of all manner of material information.

But it is to the teacher in the higher forms of our schools that these essays will be mainly useful. Principles rather than methods, are dwelt upon, and of the methods none is dogmatically insisted upon as the only possible one.

Incidentally, a great deal of useful information is given to the reader, especially as to the methods pursued in the study of history and political science in the greater seats of learning on this continent, while, moreover, there is a very complete bibliography of general historical literature and authorities, and a still more complete bibliography of ecclesiastical history. There is also a fairly complete arrangement of historical topics for the guidance of the student: but with perhaps a special attention to American history.

We notice that the editor, in preparing the second edition, has forgotten to excise some passages, which could have meaning only when the Diesterweg chapters were retained. With the exception of a few typographical errors, the book is excellently gotten up.

An Epitome of Ancient, Medieval and Modern History: by Carl Ploetz. Translated, with extensive additions, by William H. Tillinghast, Assistant in Harvard University Library. Crown 8vo., 630 pp., \$3.00. Boston: Houghton, Mifflin & Co.

The ordinary reader of general history and of those parts of English history which are interwoven with the histories of other countries always finds difficulty in keeping in distinct view the proper sequences of foreign events; especially since, as a rule, these events are pre-supposed by the writer to be known to the reader, and are mentioned in such incidental fashion that their sequence and correlation cannot be made out unless with much study. In fact some authors have the "trick," as Macaulay calls it, of writing history entirely by allusion and implication. Hallam's otherwise excellent histories well illustrate what we mean. But even the most graphic and artistic of historians have frequently to break in upon the contemporaneous flow of events for the sake of greater continuity of treatment of the subject in hand, or to introduce by mere reference, extraneous matter on the supposition that the reader will understand its exact historical importance and chronological position. Were all readers perfectly informed as to the sequence of the main events of history, such writing would be easily understood; it would in fact merely serve to give life and reality to what the mind already held in memory. But unfortunately few people have this requisite knowledge, and so the reading of history is to them not so informing, not so full of lesson and meaning, as it would be, were every event—i.e., fact—known to them. For example, who, that has attempted, in reading a history of England, to thoroughly understand the influences of the Thirty Years' war, or the wars of the Spanish Succession, or the Seven Years' war upon English policy and statecraft, has not found himself baffled by his lack of knowledge of the histories of the foreign countries concerned during the periods of the wars? He could make his knowledge complete only by a long and tedious study for which perhaps he had no time or inclination.

In Dr. Carl Ploetz's *Epitome of Universal History*, the procession of events is set forth with the utmost brevity of statement. The relative importance of these events is indicated by very expressive typographical contrivances. By virtue of an easily understood arrangement of periods and chapters, the history of any particular epoch and people can be readily found: and the contemporaneous history of other peoples can be compared with it.

Had the work remained merely a translation of the German original, it would have been of little service or interest to the Canadian student. But the parts added by Mr. Tillinghast, viz., the histories of England and America, as well as of the principal eastern nations, make the book not only especially useful to Canadian readers, but also, what it is described by its title to be, a real epitome of universal history. To complete the usefulness of the work there are numerous genealogical tables, and what is of prime importance, a very full index, which renders the book an historical dictionary.

The mechanical execution of the *Epitome* is excellent. The binding is good, the typography beautiful. The paper is purposely thin to prevent the volume from being too bulky.

Table Talk.

FIRST undergraduate (reading out)—"Will this do, Gus?" Mr. Smith presents his compliments to Mr. Jones, and finds he has a cap which isn't mine. So, if you have a cap which isn't his, no doubt they are the ones!"

Second undergraduate—"Oh, yes—first-rate!"—*Punch*.

HEREAFTER *The North American Review* is to have a new department, consisting of letters from the public criticising and commenting upon articles that have appeared in the review. The editor has long felt the need of such a department, as he receives quantities of letters that deserve a general reading.

CASSELL'S *Popular Gardening* is designed to bring a knowledge of the best gardening practice, and the principles upon which it is based, within easy reach of the people at large. The book has a colored frontispiece showing a large variety of roses, and is profusely illustrated throughout with pictures and diagrams.

A NEW weekly paper intended for Sunday and general reading is to be issued by the Methodist Book Concern, with Dr. J. H. Vincent as editor. The new weekly, which will be illustrated, will contain stories and sketches, some serious and others amusing, and will be sold for the very low price of one dollar a year. There will be a special department devoted to the Oxford League, a new organization designed to stimulate interest in the history of Methodism.

MR. JOHN WEBB PROBYN'S *Italy; from the fall of Napoleon I. in 1815, to the death of Victor Emmanuel in 1878*, will be published by Messrs. Cassell & Company in a few days. The purpose of Mr. Probyn's book is to give a concise account of the chief causes and events which have transformed Italy from a divided into an united country. Mr. Probyn passed the greater part of ten years in Italy and among Italians, so that he writes from an intimate knowledge of most of the events described.

THE following passage, taken from a speech by a Hindu gentleman in India, Mr. H. J. Bhattacha, M.A., late Vice-Principal of the Central College, Bangalore, to the native undergraduates of that institution, may be found interesting, both in matter and manner:—

"I hope you will not consider it ungenerous on my part if I express a wish, that in addition to your many admirable virtues, some of you would acquire a little more manliness of character, and courage of your opinions; perhaps also a consciousness within narrow bounds, of your own real merits, and above all, make a resolve not to say what you do not mean; a resolve not to be blinded and led astray in your words and actions by an excessively tender regard for the feelings of others, and by the deep feelings of courtesy inherent in your nature. I would not on any account like you to be rude or offensively aggressive, or to lose any of your confidence in or reverence for your superiors, but you must permit me to wish that, without suffering a y loss of your present high virtues, some of you would acquire, within certain limits, an independence of thought and judgment, and form a resolve to act upon your own convictions."

Music.

WAGNER'S *Faust* overture met with an enthusiastic reception at one of the Colonne Concerts, Paris.

THE recent Wagner *Cyclus* at Vienna brought in the enormous sum of 30,000 florins, or about \$15,000.

ARTHUR FRIEDHEIM, pianist, has aroused a well deserved enthusiasm in Berlin by his masterly performances.

ABBE LISZT is expected in Paris this winter to give a piano recital for the Austro-Hungarian charitable fund.

THE King of Bavaria has conferred the order of Maximilian on the Abt'e Liszt, and on the stage manager of the Vienna Opera.

THE first four symphonies of Schubert, edited by Johannes Brahms, have been published in one volume in the new Breitkopf & Hartel edition.

MME. SOPHIE MENTER being ill, Mlle. Eugenie Menter, a sister of that renowned pianiste, took her place and played the *Emperor* concerto in brilliant style at an "extra concert" of the Berlin Philharmonic Society.

THE Hamilton Philharmonic Society gave a performance of *The Messiah* on Feb. 24th, in commemoration of the bi-centenary of Handel's birth. The soloists are W. H. Stanley, Mrs. Hamilton, Mrs. Wyman and Mr. Warrington.

DR. DAMASCUS, the well-known musical conductor, died in New York on Sunday last. He occupied his usual post at the head of the orchestra on the previous Monday at the Metropolitan Opera House, when *Lohengrin* was given, and was with difficulty persuaded from attending the performance of *Tannhauser* on the succeeding Wednesday. He was carried off by a congestive chill.

LOUIS EHLERT, in an essay on Brahms translated in a recent issue of *Musical Items* makes the following remarks on melody:—

Melody represents the rôle of the Virgin Mary in music; it is the proclaimer of the redemption and atonement touched by the spirit. The ground-structure of a work belongs to the field of the intellect—it is the architect that designs and calculates; that watches over symmetry and rhythmical construction, contrasts the reposeful with the agitated, harmonizes, modulates and plans the counterpoint. Melody, in the highest sense, like genuine pearls, is rare. They of the Netherlands and the old Italians did not at all possess it; Bach and Handel, in proportion to their other grandeur, had it in no great measure. It seems a child of recent days, particularly that melody contained within itself that scarcely requires a harmonic support. This style of melody appears in its most decided form in Mozart and Schubert. Hum the latter's *Leise stehen meine Lieder* to yourself. This melody without any accompaniment retains all of its charm, it is based upon nothing outside of itself and is a thing by itself. How different even in Schumann, whose melody mostly requires a support. *Ich grolle nicht*, when sung without accompaniment, not only loses much of its charm, but we are conscious that an act of mutilation is taking place before our ears, and that two elements have been forcibly torn apart that cannot exist without each other.

Drama.

MISS ANDERSON has abandoned her original intention of appearing in a Paris theatre this season.

A PROMINENT theatrical manager of London holds that no person, save a surpassing genius or a low comedian, has a right in the dramatic profession unless possessed of physical beauty.

THE Brooklyn *Eagle* reports a theatrical manager as saying: "I don't know whether you know it or not, but nearly every prominent star, and many of the most successful theatres, are not run by the men whose names are printed as managers, half so much as by some quiet individual who holds the position of the power behind the throne, and who is not generally known to the public as the head of the firm."

"LOUNGER," in *The Critic*, tells us that when Mr. Lawrence Barrett was playing at the Lyceum Theatre last summer, he made many pleasant acquaintances among the leading literary men and artists of London. One substantial token of their regard for him is as delightful as it is original. It is a copy of Mr. Austin Dobson's *Old World Idylls*. Mr. E. A. Abbey began to illustrate it by making a pen-and-ink sketch on one of the blank pages. Mr. Alfred Parsons added a border of flowers to another poem. Mr. George H. Boughton lent a hand, and sketched in a lovely female figure. Mr. Alma Tadema found in the truly Greek Antioch of the *Lines to a Greek Girl* a fit subject for one of his charming reproductions from the antique. And so the little book was passed along from hand to hand, from studio to studio, gathering toll by the way, until now it contains sketches, illustrative of Mr. Dobson's poems, by Sir Frederick Leighton, Mr. Millars, Mr. Linley Sambourne, Mr. Randolph Caldecott, Mr. du Maurier, and many another. Then Mr. Dobson himself wrote a rondeau on the fly leaf.

"THE drama commenced in England, as it first began in Greece, in religion. The people were not able to read,—the priesthood were unwilling that they should read; and yet their own interest compelled them not to leave the people wholly ignorant of the great events of sacred history. They did that, therefore, by scenic representations, which in after ages it has been attempted to do in Roman Catholic countries by pictures. They presented mysteries, and often at great expense: and reliques of this system still remain in the south of Europe, and, indeed, throughout Italy, where at Christmas the convents and the great nobles rival each other in the scenic representation of the birth of Christ and its circumstances. . . . But these mysteries, in order to answer their design, must not only be instructive, but entertaining, and as, when they became so, the people began to take pleasure in acting them themselves—in inter-plotting—(against which the priests seem to have fought hard and yet in vain) the most ludicrous images were mixed with the most awful personations: and whatever the subject might be, however sublime, however pathetic, yet the Vice and the Devil, who are the genuine ancestors of Harlequin and the Clown, were necessary component parts."—*Cateridge*.

Art.

THE handsome *Art Interchange* of January 15 issued a supplement containing six designs for fan decoration.

M. A. S. TORNEY has bequeathed the sum of 200,000 francs to the city of Paris for the endowment of an art and industrial library.

MR. GEORGE I. SENEY'S gallery of celebrated paintings, comprising nearly three hundred works, and including masterpieces of the most famous modern artists, will be on exhibition at the American Art Galleries in Madison Square, New York, on and after March 16th. The collection, which is said to be one of the finest in America, will be sold at Chickering Hall on the evenings of March 31, April 1 and 2.

SEVEN cases, containing the statuary, etc., of the memorial to Edgar A. Poe, arrived at New York some weeks ago from Leghorn, Italy. The memorial is described as consisting of a life-size figure of the muse standing on a dais, crowning a medallion bust of Poe with a wreath of laurel and oak. Mr. William Winter is named as the author of the inscription under the medallion, but who the sculptor of the memorial may be not one of the notices of it that we have come across has thought it worth while to tell the public. —*Magazine of Art*.

PAPER is coming to the front as a substitute for wood in the manufacture of flooring, and a very interesting test of its fitness for the purpose has been made recently by its adoption by skating rinks. We have seen a report of the experiment of its introduction into a large skating rink in Indianapolis, Ind., where it has been practically tested, and thousands who have skated on its smooth surface are said to have pronounced it to be admirably adapted to the purpose. By the system of manufacture adopted, the whole floor is made as smooth as a sheet of ice, there being no seams that can be seen or felt; and, in addition, there is an inherent adhesive quality in paper which prevents any slipping of the rollers. These floors will undoubtedly become very popular.

HELEN ZIMMERN writes interestingly on "Artists' Homes" in the *Magazine of Art*. Speaking of artists' houses generally, she says, referring to that of Mr. Frank Holl:—As in so many of the modern architectural essays, there is a want of repose, harmony, and dignity in the exterior of his house. Perhaps the real truth lies in the fact that modern requirements in the way of comfort, light, and healthiness do not go easily hand-in-hand with picturesque beauty. Certainly there is a lack of spontaneous development about the houses in the new style of architecture with which London is being so liberally adorned; and though their individuality, their warm-colored red-brick material, their effort, more or less successful, after beauty of aspect, are a welcome relief to the monotonous, featureless architecture of an earlier day, there is a danger that the present style, which in some cases are a mere affectation and a sham, may become as tedious and lifeless as the style that preceded it. And this because it is not genuine, not the material outcome of the period in which it is reared—in short, because it is eclectic, and that which is eclectic is never genuine, and can never long continue its hold upon our tastes.

Practical Art.

PERSPECTIVE.

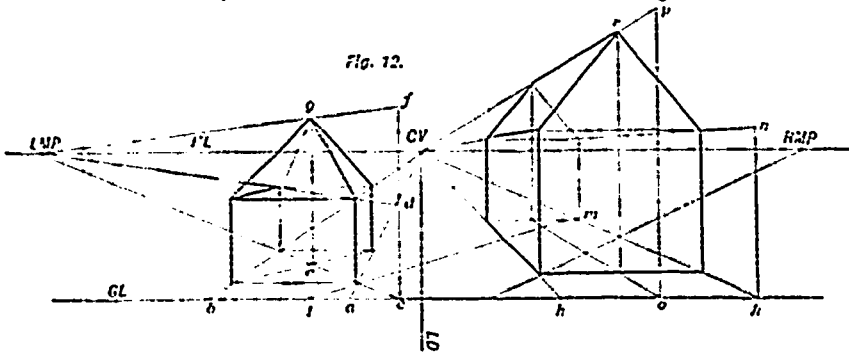
SIXTH PAPER.

Problem 16.—Represent the slab when resting on one of its large faces, two of the others being parallel to P P, near corner of base, 3' to the left and 4' back, and upon it place the pyramid, the edges of top of slab and base of pyramid being contiguous.

In the examples given below, the height is 6', distance 16', and scale $\frac{1}{8}$ " to the foot, or 1/96.

Problem 17.—Represent in perspective a block 6' square, 4' thick, lying on the ground with the near right-hand corner of the base 3' to the left and 2' back. Make the top of this the base of a pyramid 4' high.—Fig. 12.

Measure to the left of L D 3' to *a*; then 6' further to *b*, and draw lines from these points to C V; to the right of *a* measure *ac*, 2'—the distance of near corner back from P P—and draw *cL M P*; complete the square base by drawing horizontal lines from the far left-hand corner to the right, and from the near right-hand corner to the left, to meet the lines retiring to C V from *a* and *b*. Now, in order to find the height of the block, a perpendicular must be erected at the point of contact of one of the corners of the base with the P P at *a*, *b*, or *c*. If the measurement was taken on a perpendicular at *a* or *b* and carried back in the direction of C V, the height of the block would be correctly given on a vertical line from either of the right or left-hand corners of the base, according as *a* or *b* was used; and to measure the height of the top of the pyramid a new line would be required, drawn from the point of contact of

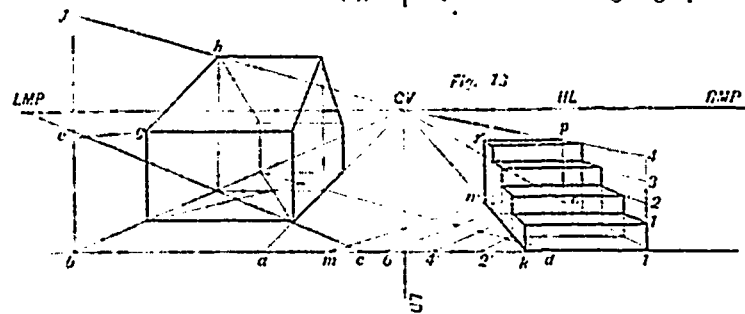


the centre of the base (*c*) with the P P, when brought from the direction of the C V or L M P. Now, it will be noticed that lines from the perpendicular at *c* to L M P will pass over two corners of the block, as well as the top of the pyramid, and so it will give the height of both, and should be used in preference to a perpendicular from either *a* or *b*. This is explained in last paper where both methods of measurement are shown in figure 11, at *k s* and *o p*.

Problem 18.—Place in perspective a house standing with its gable ends parallel with

P P, near left-hand corner being 6' to the right and 3' back. Height to ridge 12', to eaves 7', ground floor 8' x 16'.—Figure 12.

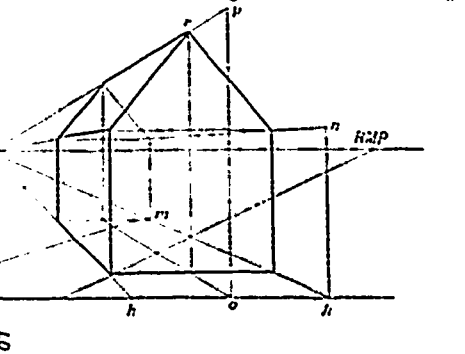
First find *h*, 6' to the right, and make *h k* equal to the width of the building (8'); in *h C V* find the near corner, and in *k C V* the far right-hand corner, by measuring to the left of *k* 19', to *l*, because the length of the building is 16' and it is 3' back; *m* would be this point. If *l* was found 19' to the left of *h*, *m* would be in the line *h C V*. Having completed the ground floor, at *k* erect a perpendicular, 7' high, to find the height of the eaves, and from the centre of *h k* (*o*), a



perpendicular, *o p*, 12' high, to find the height of the ridge. The rest of the work will be evident on reference to figure 12.

Problem 19.—Place in perspective a house 8' x 16', having the gables over the long sides which are perpendicular to P P, near right-hand corner, being 6' to the left and 4' back; height to eaves 5', to ridge 10'.—Figure 13.

Find the position of near right hand and far left-hand corners, as explained in last problem, and complete the ground plan or base. As the ridge is parallel with P P the ends, at the top of the gables must be over the centre of the long sides of the building,



and these must retire towards C V. The centre of the sides can be found by means of the diagonals of the base and a horizontal line through their point of intersection; erect perpendiculars from these central points. The right and left-hand ends of eaves and ridge being in the same respective planes, their height can be found by one perpendicular, and as *b C V* passes underneath the left-hand ends, a line from *c* (5' high), to C V will give *g* as the height of the eaves, and the line from *f* (10' high) to C V, the height of the ridge. Horizontal lines from these to

cut the vertical lines from the corners of base will give the corresponding points on the side of the building nearer to L D.

Problem 20.—Show a flight of 4 steps, 5' long, 2' tread and 1' riser ascending towards the C V, the near left-hand corner of base touching P P in a point 5' to the right.

Find *k* and *l*, and measure off on *k C V*, *k n*, 8' long; *k n o l* will be the base of the steps, or the portion of ground covered by them. When speaking of a step, or steps, the *length* usually refers to the long edges, the *tread* to the width of the surface on which a person treads in going up or down, and the

riser to the width of the face of a step, or the distance it rises above the one below. As there are in the group under consideration 4 steps of 2' tread, the distance from front to back is 8'. At *l* erect a perpendicular and set off on it as many divisions equal to the length of the riser as there are steps, in this case 4 of 1' each, and from 4 draw 4 C V, giving *p* as the far right-hand corner, and a horizontal line from *p* to meet the perpendicular from *n* in *r*; this will be the far left-hand corner of top step; from *k* measure to the left distances of 2', 4', 6' and 8', and from these points draw lines to R M P to cut left side of base *k n*, and from these points, horizontal lines to the right side of base *l o*, and from each of these new points erect a perpendicular, to cut the lines from 1, 2, 3 and 4, to C V. In this way the angles at the right side of steps are obtained, and the corresponding ones on the left side can easily be found by horizontal lines.

Arthur J. Reading

A THOUSAND copies of Mr. Cross's *George Eliot* have been taken by the Mudie libraries.

MR. HENRY M. STANLEY is rapidly pushing to completion the manuscript of a work on his African labors, called, "Congo, or the Founding of a State; a Story of Work and Exploration." It will consist of two good-sized volumes; and it is expected that the manuscript will be ready for the printer within a month.

MR. FRANCIS PARKMAN has given to the Massachusetts Historical Society a series of 35 bound and three unbound volumes of historical manuscripts relating to the French in America. They are the raw materials on which his incomparable historical writings have been based, and for the most part have never seen the light.

The High School.

WHY WE SPEAK ENGLISH.

BY RICHARD GRANT WHITE.
(Continued from last issue.)

WE have reason for believing that up to the time when this division took place in the country south of the Caspian Sea, the Aryan people spoke one language; but sufficient time had already elapsed for a considerable change to have taken place in the tongue which was spoken on the plains at the foot of the Hindoo Kosh. Language changes rapidly among people in a low state of civilization, without literature, without letters which are the landmarks and conservators of speech. But this point of time and of place is that of a great division in the speech of the Aryan people. Of the language of those who moved westward into Europe there are no remains which date within many centuries of this period; but of the language of those who moved south into Hindostan, we have in the existing Sanskrit a representative which is of almost indefinable antiquity, and the perfect preservation of which is marvellous. It is no rude, ruinous relic, but complete, elaborate, and finished to the highest point of perfection in its kind. It will be seen (and this must be constantly borne in mind) that Sanskrit is not the original Aryan language, but only the oldest existing offshoot from that language. The great, the inestimable value of the discovery of Sanskrit was not that we find in it the source of other languages, not that in it was the origin of the words spoken by the various peoples of Europe; but that it furnished evidence of the most important fact in the history of language, one of the most important facts in the history of the world. It had been assumed that the countless words which were similar in the language of the European peoples, and the many which were identical, were derived one from another; that they were adopted by one people from the language of another; that they were the product of neighborhood, of intercourse, of imitation, of convection—that is, that they were carried from one country and people into another. The discovery and the study of Sanskrit proved that these words, or most of them, came into the various languages in which they are found, not by any or by all of these methods, but by direct descent from a speech which was at one time common to the forefathers of all the peoples in India, in Persia, and in Europe. Of these various languages Sanskrit is not only the oldest, but so very much the oldest that it carries us up very far toward the original speech of the Aryan or Indo-European race; so far that we are not without reasonable hope that philological science may elaborate by its help a proximate form of the elements of the original Aryan speech.

It is worthy of remark that the European language most like the Sanskrit, most like it in substance, and notably most like it in grammatical structure, is the Greek: the language of the people nearest Asia, nearest the point of the division of the Aryan people into two great streams of emigration. And here,

There is a language, the Luthuanian, spoken by a Lithuanian people, north-west of the Baltic, near Poland, which has preserved in a remarkable and unique manner forms of the old Aryan speech which are extinct in other European tongues. But it is the language of a small, rude, unimportant people, without a literature, and indeed was not written until the sixteenth century. It is of great interest to the student of comparative philology, but of none to us at present.

too, it may well be remarked that the book of Genesis, in one of those ethnological passages which reveal a knowledge of prehistoric man so perfectly in accordance with the results of modern historical inquiry and scientific investigation that it would seem that they must have been a revelation from Omniscience, makes the confusion of tongues and the consequent dispersion of nations take place upon the plains of Shinar, in the very region, at last, where the Aryan dispersion began.

To resume our brief story of the Aryan advance to take possession of the world; for we are no longer concerned with what went on in India or the East. Many centuries had now elapsed, and the Aryan people had multiplied into many millions of men, and had formed themselves into nations or peoples ignorant of their common origin, and regarding each other as all peoples then regarded each other, as enemies, rivals in the possession of the earth and its products. The emigration continued; those in advance being driven and pushed on by those who followed. Europe once entered, there was again a division of the stream of advancing, conquering men. The dispersion was doubtless greater than before, but again there were two main bodies, one keeping the south along the northern shores of the Mediterranean Sea, the other moving northward, toward the Baltic. The former has been designated from the principal peoples involved in it, or resulting from it, the Italo-Græco-Celtic strain; the latter is the Gothic. It is with this that we are chiefly, but by no means exclusively, concerned. We are Goths.

It has just been said that those who were in the advance in this great emigration were pushed on by those who followed. Who were the advance of this westward movement, the first Aryans who entered Europe? There is no reasonable doubt that they were the Celts, the people who, some thirteen hundred years ago, were in absolute and complete possession of the islands of Great Britain and Ireland, and a small part of the northwestern coast of what is now, but was not then, France. These people, this head of the Aryan column, passed through southern Europe, (we know it by the names they left behind them, given to places during their temporary, but not short occupation of the soil), and coming to the ocean, went northward, then crossed the English channel, and took possession of Britain and Ireland. There they stopped simply because they could go no farther. But they were still pushed by those who followed. The invasion of Britain by the Romans, and yet more, the after invasion and occupation of it by the so-called Anglo-Saxons, our forefathers, were a mere continuation of the Aryan emigration which had begun at the foot of the Hindoo Kosh, in Asia, thousands of years before.

(To be continued.)

PRIZES, scholarships, medals seem to be the spur to study now-a-days. The Turin Royal Academy of Sciences has just given notice that it will award a prize of \$2,400 in 1886, to the author of the best work on physics, chemistry, physiology, natural history, geology, history, geography, or statistics or to the author of the most brilliant or useful discovery. The competition is open to all countries.

The Public School.

HOW CAN THOUGHTLESSNESS OF PUPILS BE REMOVED?

By N. A. CALKINS, LL.D.

Asst. Supt. of Schools, New York City. (From a lecture delivered before the Brooklyn Teachers' Association, Dec. 5, 1884.)

(Continued.)

COMMONLY, the lessons in number and in arithmetic are made chiefly exercises in the modes of using figures, merely to the neglect of using numbers in their relations to given questions, for the purpose of developing habits of correct thinking. Probably there are many who may think the statement just made is not true of their teaching. Let me urge each teacher to study carefully her own methods, in the light of the following suggestions, and see if the statement is too broad.

The training to think about what can be done with numbers should be begun during the child's first year in school. When the pupils have learned, by the use of objects, to count, to add, to take away from, etc., they should be taught to use simple numbers for the purposes of leading them to think of their common relations to things by means of familiar questions concerning them. A few questions will suggest some of the many ways in which pupils may be led to think before they act:

A boy has two cents in his hand, and three cents in his pocket; what can you tell me about that boy's money?

A little girl has three dolls; how many more dolls must she get to have five dolls?

Henry had six apples, and gave three of them to his school-mates; what can you tell me about his apples?

A boy had twelve cents; he paid five cents for oranges; what can you find about that boy's money?

During the second and third year in school, the questions may be more and more difficult as the pupil's general knowledge of numbers advances. It is very important that the pupils be led to consider what can be found out about each question before the numbers pertaining to the question are used to obtain an answer. After the answer has been obtained, require the pupils to tell what they did. The numbers that I write on the blackboard and the question following will serve as illustrations.

A man paid \$12 for a pair of boots, and \$6 for a hat; what can you find out from these numbers?

A lady paid \$50 for a cloak and a hat; she paid \$12 for the hat, what can you find out?

A farmer had one dog, two times as many cats, and as many horses as the dog and cats together; and as many cows as he had of dogs, cats, and horses; how many cows had the farmer? How many animals?

A man bought 15 tons of coal; he gave \$6 for each ton; what can you find out? How?

A man paid \$84 for coal; he paid \$6 a ton; what can you find out? How?

A man paid \$1.15 a yard for carpet, and 10 cents a yard for making and laying it; he bought 25 yards; what can you find out?

The teacher may sometimes write on the blackboard the numbers used in the question, then state the problem as follows:

256 tells how many *miles* a railway train ran; 8 tells how many hours it ran; what can you find out from the two numbers?

1,280 shows how many acres of land a western farmer had. He decided to sell all except 480 acres, at \$5 per acre; what can you find out about this? How?

The following questions will indicate some of the means that may be used for training pupils to *think* in the lower classes of grammar schools:

A school containing 540 pupils has *one half* of them in *five* classes, *one fifth* of them in *two* classes, and the remainder in *three* classes; wanted, the number of pupils in each class. How did you find it?

There are 180 more boys than girls in a school. The school contains 900 pupils. Can you find the number of girls in that school? What more can you find? How?

A man deposited *one half* of his money in one bank, *one fourth* of it in another, and the balance—\$1,500—in another bank; what can you find out about that man's money? How?

Pupils who are trained to *consider what can be found out*, by means of these and similar questions, and who learn to *tell how they do it*, may easily be led to *consider the conditions* of every problem given, in order to determine what must be done in each case to obtain the required answer. And pupils thus trained will be led to *think before they act*. Try it, and see what effect it will have toward removing thoughtlessness from your pupils in arithmetic.

At the National Educational Association at New Orleans—Governor McEnery, of Louisiana, will welcome the members of committee appointed to attend the *International Cotton Exposition* at New Orleans, Feb. 24, and also the Department of Superintendents of the Association, which meets there, Feb. 24, 25, and 26. Every possible arrangement is being made by the local committee at New Orleans for these meetings. The details of opening will be announced later.

THE teachers of Lewiston, Maine, have introduced the use of the impersonal pronoun *thon* into the grammar. 'Lounger' in the *Critic*, has the following on the word:—

In the bright lexicon of the *Boston Saturday Evening Gazette*, there is to be no such word as *Thon*. The proposed new common-gender pronoun, whose use was suggested and explained in the *Critic* a few months ago, has been welcomed in various quarters as a friend in need; but the *Gazette* 'has no use for it.' Its most recent editorial on the subject complains that it resembles no other word or words in the language. But this is a mistake. *Thon* is simply 'that' and 'one' telescoped. In the right place, it is excellent neologism, and has certainly done nothing to justify its persecution. I find the following paragraph quoted in the *Erie, Pa., Herald*, from the Lewiston, Me., *Journal*:

Some of the teachers in the public schools are inculcating the use of the pronoun 'thon.' 'Thon' is impersonal and of single number. When the teacher desires to inculcate the fact that 'everybody must get his or her lesson or he or she will get his or her ears pulled,' the teacher, in a cabalistic way, says that 'everybody must get thons lesson or thons ears will be pulled.' The teachers say it is of great use and it is taking the public rapidly. It has its dangerous features perhaps. At any rate, the folks at home who don't allow the children to get ahead of them should be warned in time. Let everybody look out when thons child comes home with thons thon.

The Kindergarten.

THE IMPORTANCE OF CHILDREN'S PLAY.

HARONESS VON MARENHOLTZ-BLEIOW.

(Continued from last issue.)

What a long series of works of every kind lies between the first hut of branches made by man in a state of nature and the palaces of our great cities; between the first coarse garment of skins and the manifold articles of luxury used in modern dress!

The hands of children commence their first rough trials at building whilst digging in earth and sand. The scooping of caverns, the building of houses and bridges, forming and fashioning of all kinds (from the dirt-pies made with the mother's thimble to the proud edifices made with the contents of the brick-box, or with a pack of cards), and lastly drawing and modelling—all spring from the instinct of construction, the true instinct of work.

Froebel sees in it a manifestation of the home-instinct, and discovers a first longing for independence and ownership in quite young children when they make a partition of chairs in a corner of the room and call it their house, or their room, or when they divide a box into compartments, calling them rooms, gardens, stables, etc.

The Kindergarten favors the child's instinct of construction in every possible manner. The little pupils build and form in countless ways and with all sorts of materials, and always in an order agreeing with the history of civilization. Not only dwellings and utensils are formed, but they weave and they sow with flexible matters such as may have been used by our progenitors for their first clothing. By "plaiting," a tissue is produced not unlike those plaited mantles which the New Zealanders, make of sedge and bast, and by a progressive development the patterns rise to the level of the artistic products of the modern loom. Paper-folding and pattern-pricking, pattern-stitching, and paper cutting give opportunities of learning numberless turns of manual dexterity which are not only of use in making articles of dress, but which prepare the way for all sorts of hand work. The hand (as well as the senses in general) is prepared for any and every technical occupation, and thus acquires not alone the dexterity which the workman will require in his future calling, but also that general dexterity which is a boon to everybody in practical life. It is therefore a sort of first initiation into industrial labor.

People are too apt to disregard the educational value of early accustoming a child to these exercises, and to think almost exclusively of the manual cleverness which they

produce. And yet the working classes owe their practical views especially to their manual occupations, which by technical experience give a concrete base on which to form correct judgments.

The chief benefit, however, of children's work, and one that cannot be replaced by anything else, is to be sought in its moral influence. Early capacity for work, and the habit and love of working are in truth guardian angels to a child or to a youth, whilst they offer the best possible guarantee against his ever sinking into poverty. The child must habituate himself to the fulfilment of duty, if the man is to lead a truly moral life. But to fulfil duties it is necessary to be capable of independent action, and it is the chief object of the Kindergarten to create this capability already in the first stage of life.

But it would be vain to expect the desired results from merely mechanical work, from occupations imposed upon the child. Only that which pleases him, excites his imagination, awakens his sentiments, is able to bear moral fruit. The child must, in the full sense of the word, act for himself, he must give his whole soul to the work while his hands are busy. But this can only be the case when he is producing something that gives him pleasure, when he can really create something by his activity.

Froebel's means of occupation are characteristic and original in this, that they enable even the weak powers of a child to produce and create something, that they awaken and develop the first small germs of human creative genius, that they arouse the inventive faculties of the infant mind, and put in the place of mere imitation, the production of original works. Small and modest as these works may be, they bear the stamp of personal originality, for they are the offspring of combinations made by the child himself.

Precisely in the point where criticism usually attacks the Kindergarten lies its greatest worth. It is imagined that Froebel offers to every child the same prepared material with the same directions for use, thus compelling in some sort, the production of pre-arranged and prescribed results, the same for all the pupils, and thereby fettering the individual manifestations of each child's nature.

The contrary of all this takes place. As the children receive, not ready-made articles, (playthings) but only materials, they can form or transform these at will, within the limits which their nature prescribes. But such transformation without plan or purpose would either render impossible all regular production, or would leave it to mere chance.

THE Teachers' Association of Vermont have memorialized the legislature in favor of the town system of schools.

Educational Intelligence.

LIST OF PAPERS FOR THE INTERNATIONAL CONGRESS OF EDUCATORS AT NEW ORLEANS, FEB. 23-28, 1885.

1. PROGRESS of Education in Ontario—An Historical Sketch, by J. George Hodgins, M.A., LL.D., Deputy Minister of Education for Ontario.

2. The University System of Ontario by J. George Hodgins, M.A., LL.D., Deputy Minister of Education for Ontario, (on behalf of J. E. Bryant, Esq., M.A.)

3. The Collegiate Institutes and High Schools of Ontario, by D. C. McHenry, M.A., head master of the Collegiate Institute, Cobourg.

4. Religious and Moral training in the Schools of Ontario, by J. E. Wells, M.A., Editor of the *Canada School Journal*, Toronto.

5. Female Education in Ontario, by Rev. Alexander Burns, D.D., LL.D., Principal of the Wesleyan Ladies' College, Hamilton.

6. Public and other Libraries in Ontario, by John Hallam, Esq., ex-chairman, Public Library Board, Toronto.

7. The Normal Schools and their Functions, by Joseph H. Smith, Esq., P.S.I., County of Wentworth.

8. The County Model Schools and their Work, by John J. Tiley, Esq., Inspector of County Model Schools.

9. Teachers' Institutes and their Purpose, by James L. Hughes, Esq., P.S.I., City of Toronto.

10. Simultaneous and Uniform Examinations, by Alex. Marling, LL.B., Secretary to the Education Department.

11. Promotion Examinations in the Public Schools, by D. J. McKinnon, Esq., P.S.I., County of Peel.

12. Value of Uniform Examinations, by Wm. Carlyle, Esq., P.S.I., County of Oxford.

13. School House Architecture in Ontario, by John Dearness, Esq., P.S.I., County of Middlesex, East.

14. School Hygiene in Ontario, by David Fotheringham, Esq., P.S.I., County of York, North.

15. The Kindergarten in Ontario, by James L. Hughes, Esq., P.S.I., City of Toronto.

16. Technical Education in Ontario.

17. Agricultural Education in Ontario, by Dr. Hodgins (on behalf of James Mills, M.A., President of the Agricultural College, Guelph.)

18. Theological Education in Ontario, by Rev. Albert W. Newman, LL.D., Professor of Church History, Baptist College, Toronto.

19. The Mechanics' Institutes in Ontario, by Otto Klotz, Esq., President, Association of Mechanics' Institutes.

20. Education of the Indians in the Dominion, by Samuel Woods, M.A., Principal of the Ladies' College, Ottawa, (aided by L. Vankoughnet, Esq., Deputy Superintendent-General of Indian Affairs, Ottawa).

21. Condition of the Indian Schools in Ontario, in 1884, by Dr. Hodgins (supplementary report).

22. Education of the Blind in Ontario, by A. H. Dymond, Esq., President of the Institute for the Blind, Brantford.

23. Remedial and Reformatory Institutions in Ontario, by James Massie, Esq., Warden of Central Prison, Toronto.

(A) Provision for Medical Education in Ontario.

(B) Provision for Legal Education in Ontario.

Note.—Writers for these papers, and for one on the Literary and Intellectual Progress of Ontario, have not been obtained.

Letters of regret at not being able to prepare papers have been received from Very Rev. Principal Grant, Rev. Principal Cayen, D.D., Rev. Principal Sheraton, Rev. Principal Jacques, Principals Buchan, Kirkland, MacCabe; Professors Reymar, Marshall, Galbraith and Haanel; High School Inspectors Hodgson and Seath; Head Masters McMurchy, Purslow, Spotton and Dickson; Public School Inspectors Kelly, Boyle, Alexander, Mackintosh, Johnston, Glashan, Little, W. E. Tiley and J. R. Miller; also from Rev. Dr. Davies, Rev. Dr. Bell (Queen's University), J. Antisell Allen, Esq., Kingston, Dr. McLellan, Dr. Barrett, Dr. Carlyle, Dr. O'Reilly, G. Mercer Adam, M.A., Geo. H. Robinson, M.A., J. Howard Hunter, M.A., W. Houston, M.A., Wm. Scott, M.A., W. H. Howland, Esq., and R. Mathison (Deaf and Dumb Institute, Belleville).

It has been proposed at Harvard University to advise with the students as to rules of order.

The tenth session of the Sauveur Summer College of Languages, is to be held at the University of Vermont from July 6th to Aug. 14th.

WE hear that the attendance at the Stratford Collegiate Institute is, on the average, 190; and that there are some 223 pupils in attendance.

AT the last meeting of the Lindsay Board of Education, it was shown that the attendance at the high school during the month of January was 104; average attendance, 91.

CALIFORNIA, Missouri, and Ohio are considering the important question of publishing by the State the books needed in their public schools. Should they eventually carry out this project the books will probably be printed in the State prisons.

A TEACHER, at the Rhode Island Institute of Instruction, recommended the introduction of pure story-books as an antidote against impure fiction. This sounds pretty. Is it practicable?

ACCORDING to the *Publisher's Weekly*, there were printed in 1883, 197 works on education and language, in 1884, 227; on physical and mathematical science, 90 in 1883, 134 in 1884.

THE Trustees of Princeton College have resolved that, while all manly sports should be encouraged, a restraint must be laid on the abuses that have recently appeared in public contests.

THE teachers' institute for East and West Victoria will be held in Lindsay on Monday and Tuesday, 2nd and 3rd March, by Dr. McLellan, director of institutes. Dr. McLellan will deliver a public lecture in the evening.

THE question of increased school accommodation for the Simcoe schools is occupying the attention of the authorities. A committee has been struck to prepare a scheme for submission at the next regular meeting of the Board.

THERE is no good reason why the school-books should not be manufactured by the State, and no good reason why the men and women who are supported by the tax-payers in the state institutions, charitable and penal, should not do a great part of the work.—*Springfield, O., Globe-Republic.*

WE learn from *The Current* that Texas "has set apart thirty million acres of land to provide for general education. This is as large an area as the whole of England." We do things on a grand scale upon this side of the Atlantic.

The attendance at the public school for December last was 645, average 526. For January the attendance was 658, average 511. Mr. Hallett reported that a new form of monthly report was required. It was also explained that the central school buildings were cold and subject to draughts.

FROM the published returns of the examinations of candidates for entrance to high schools, Ridgetown public school stands high. Out of 17 candidates presented, 14 passed and one was recommended, and many of these with very high averages. There are about 150 students on the books.

AT a special meeting of the Brantford Collegiate Institute Board of Trustees, several applications were received for the vacant position of drawing teacher. On the recommendation of the Principal and with the testimonials and certificates possessed, Miss May Long, a graduate of Cooper Institute, New York, was appointed.

A MEETING of the Listowel High and Public School Boards was held on Tuesday evening, to consider the advisability of having the German language taught in the public and high schools. On account of the absence of a majority of the High School Board, it was thought advisable to postpone the meeting until some other time.

THE opening of our new public school, says the *Cornwall Reporter*, took place on Monday, and was largely attended by the parents of the scholars. An opening address was given by Mr. J. W. Liddeil, Chairman of the Board of Trustees, and several prominent gentlemen also addressed the audience. The whole was a pleasing proceeding.

THE Government has issued three large new maps of Ontario and Quebec, the great North-West Provinces, and British Columbia. They are 4 feet 4 inches long, by 3 feet 4 inches wide, colored and beautifully printed on heavy paper, all places of importance are clearly shown, and everything is mapped out as distinctly as it could be desired.

PETERBOROUGH Collegiate Institute has requested the Guelph High School to co-operate with it in memorializing the Government to devise some means whereby some relief can be given to towns municipally

separated from counties, as that town had felt it a great hardship to keep up their Collegiate Institute, as one-third of the pupils were from the country, without getting any aid from the county.

A NEW grammar has just been published in England which has some new features, among them a Sound Alphabet. The author gives the following example of its use, which will be of interest to the students of phonetics in this country :

Swete Auburn ! lubliest viladje ov dhe plane ;
Whare helth and plenti cherde dhe laboring swane ;
Whare smiling spring its earliest vizit pade,
And parting sumerz lingering bloomz delade :
Dere lubh banes of mosenz and ere,
Sats ov my yoothe, when everi sport cood pleze,
Hou ofen hav I loitered ore thi grene
Whare humbl hapines inderde eche sene !
—*The Current.*

STATE Superintendent, I. B. Brown, of Ohio, in his recent report devotes considerable space to school-house sanitation, which is beginning to receive the attention it demands, and some very valuable suggestions are made in a chapter on the "Model School-house for Cities." He says that in hundreds of country schools there is positive absence of that thorough and efficient system of common schools which is required. This weakness is due to the lack of system in the schools of the State, and the frequent conflicts of authority between township and sub-district boards of education. The defect could be remedied by the concentration of authority in one board of education for each township district.—*New York School Journal, Feb. 7.*

THE Chautauqua Literary and Scientific Circle have accepted an annex donated by a liberal and enthusiastic gentleman to be devoted to the study of agriculture, horticulture and kindred subjects. It is designed for young people who may become members, on the payment of an annual fee of 25 cents. A programme of work will be laid out for the year, and reports made according to a given plan. The members will sow and reap in season, and go through a course of reading in the winter. The bureau of information on farming subjects is at the Houghton Farm, Mountainville, Orange Co., N. Y., but applications for membership must be made to Miss K. A. Kimball, Plainfield, N. J. Mr. Charles Barnard, late editor of *The World's Work* department of *The Century*, has been made Director of the Chautauqua Cultivator's Circle.

At the Collegiate Institute, Cohourg, there is to be an annual course of lectures. A series of addresses has been arranged for,—five of a descriptive character, and intended to supplement the regular work in History and Geography; and four on subjects relating to culture—physical, æsthetic, moral and intellectual. They are as follows:—Feb. 27th, "Visit to St. Paul's Cathedral," Rev. N. Burwash, S.T.D.; March 13th, "Physical Culture," Rev. H. Pedley, B.A.; March 27th, "Wonders of the Yellowstone," H. Hough, M.A.; April 10th, "Æsthetic Culture," Rev. F. H. Wallace, B.D.; April 24th, "A Tour in Norway," A. P. Coleman, Ph.D.; May 8th, "Moral Culture," ("Our Boys,") Rev. Joseph Young; May 22nd, "Quebec, and its People," Rev. James Roy, LL.D.; June 5th, "Influence of Literature," Rev. D. L. McCrae; June 19th, "An Atlantic Voyage," J. Vance Graveley, Esq.

Personals.

EDUCATIONAL.

MR. M. MCKAY, who taught at McIntyre last year, is now teaching at Honeywood.

PROFESSOR YOUNG, of Princeton, is on his annual lecturing tour among New England schools.

PROFESSOR JOHN FISKE, of Harvard, will lecture in this city next month on "The American Revolution."

MR. GEORGE AUGUSTUS SALA thinks Mr. Gladstone lacks the decision required in dealing with great crises.

MR. WILLIAM KNOX has recently been appointed seventh master in the Stratford Collegiate Institute.

PROF. STAFFORD, of the Tulane University, New Orleans, comes out with a denunciation of Cable's Creole dialect as wholly fictitious.

MR. J. W. BENGOUGH, Canada's comic lecturer and cartoon draughtsman, will lecture in Walkerton on March 5th, under the auspices of the High School Literary Society.

PRESIDENT KNOX, of Lafayette College, Pa., has begun a vigorous course of discipline against drunkenness and rowdiness, and Philadelphia papers commend this proscriptive persecution.

We have just learned that the Rev. Robert Torrance, Inspector of the Guelph Public Schools, has been admitted, without personal application, a member of the Canadian Postal College of the Natural Sciences.—*Guelph Mercury.*

PROFESSOR BENJAMIN SILLIMAN, of Yale College, who died in New Haven, January 14th, of dropsy induced by heart-disease, was in the sixty-ninth year of his age. He had been connected with Yale College as a teacher or professor since he graduated in 1837.

GENERAL.

A MARBLE bust of Colonel Fred Burnaby, paid for by popular subscriptions, is to be placed as a memorial in the new Birmingham Art Gallery.

PROFESSOR JOHN RUSKIN on the 8th of this month celebrated his sixty-sixth birthday anniversary.

MISS EVELYN SPYER is spoken of as a coming *fullet*. She is an accomplished pianist.

MRS. CELIA THAXTER is spending the winter in Boston, devoting herself principally to painting. She is as fond of the brush as of the pen, and wields it as skillfully.

THE death is announced, at the age of seventy-six years, of the Countess de Cambacérés, eldest daughter of Marshal Davoust, Prince of Eckmühl.

AMONG the Rev. Stephen Gladstone's wedding presents were a couple of checks for \$500 apiece, sent by the Duke of Westminster and Sir Andrew Clarke.

MESSRS. HOUGHTON, MIFFLIN & Co. have received by cable an order for a copy of the *édition de luxe* of Tedder's illustrations to

the Rubáiyát of Omar Khayyám for the Queen of Italy.

MR. W. S. GILBERT personally prepared the plans and superintended the construction of the fine new house in Harrington Gardens, and he is exceedingly well-satisfied with it. Its interior walls are faced with white glazed bricks, and throughout the house is lighted by electricity, supplied by a dynamo and steam engine in the cellar. In the dining-room the electric lamps are of cut glass made in exact imitation of pineapples. The drawing-room fireplace is of carved alabaster.

MOIÈRE JETON, the French sculptor, proposes to execute, in honor of Victor Hugo's eighty-third birth-day anniversary next week, Thursday, a monument representing a bust of the poet with the Venus of Milo placing a crown upon his brow. The conception is "antique genius paying its tribute of homage to modern genius," which is all very well, but why should the Goddess of Love be chosen as a type of "antique genius"? And how can a goddess without hands or arms place a wreath upon anybody's brow?

THERE were only five French Academicians younger than Edmund About, who was 56, namely:—François Coppée, 42; Sully Prudhomme, 49; Pailleton, 50; Ha évy, 50, and Victorien Sardou, 53. Taine and Perraud are 56. Ollivier is 59; Dumas, 60; Renan and Cherbuliez, 61; Pasteur, Bertrand, Du Camp and D'Aumale, 62; Octave Feuillet, De Mazade and the Duc de Broglie, 63; Augier, 64; John Lemoine and Labiche, 69; Jules Simon, 70; Duruy, 73; De Lesseps, 75; Legouve, 77; Victor Hugo, 82, and M. de Viel-Castel, the *doyen*, is 85.

IN spite of Mr. Chamberlain's socialistic propaganda, the present English Government is considerably interested in real property. Mr. Gladstone is a landed proprietor with a rent-roll of \$25,000 a year. Lord Harrington is heir to 200,000 acres, with a rental of more than \$350,000 annually. Lord Derby has a much smaller acreage than that of the Devonshire estates, but his rent-roll foots up to something above \$850,000 a year. Earl Spencer gets about \$210,000 a year, and one of Mr. Gladstone's new peers, Mr. Dobson, owns several thousand acres of valuable land.

UNDER President Robinson the course at Brown University, says the *New York Tribune*, has been gradually transformed in sympathy with prevailing ideas. Elective studies have been multiplied; the modern languages have been extended through several years; and elasticity has been imparted to the course in every direction. Twenty years ago French was a sophomore and German and elective senior study. Now students are examined in French upon entering the college; Racine, Fénelon and Corneille are read in freshman year as required studies; French is continued as an elective study in sophomore and senior years; and German is an elective study from sophomore year to graduation. Sufficient time is given to these studies to enable students to acquire practical familiarity with both languages. The classics, meanwhile, have given up one recitation a week in freshman year, and with the exception of a change to higher authors in the second half of sophomore year, have barely held the ground occupied twenty years ago. Latin and Greek between them have nine hours a week in freshman and five in sophomore year; and are elective studies thereafter.

Correspondence.

WHY OBJECT TO "SHORT-HANDER?"

To the Editor of the EDUCATIONAL WEEKLY:

THIS question arose in my mind when I read the second paragraph in the second column of your issue of 12th inst. (p. 99). Why should "short-hander" be classed among the "really detestable words" which you so severely criticize? The question is, to me, of personal interest; for I am responsible for the introduction and circulation of this new coinage. Hitherto, those who wrote shorthand were called stenographers, phonographers or shorthand writers. The first was the old term applied to those who wrote the ancient systems of stenography; the second was introduced when phonography or "sound-hand" as originally named, became popular; while the third was a compromise indicating one who wrote shorthand, whether stenographic—that is, orthographic, or phonetic. But the term "shorthand writer" was objectionable: (1) As being redundant—the syllable "hand" implying writing; and (2) as being more lengthy than necessary, and hence not in keeping with the shortening principle of our art-science. As to the two remaining terms, "stenographer" is wholly inapplicable to English-speaking shorthanders—(I beg pardon, shorthand writers):—for with no exceptions worth mentioning they write phonographic systems; while "phonographer" is objectionable on account of the digraphs "ph-ph" which are unphonetic, untruthful and unphilosophical. Yet if we wrote "sonographer," the EDUCATIONAL WEEKLY and all the educationists, or educators, or educationalists (or whatever their proper names may be) would send us to the foot of the class as not being properly accomplished spellers (or spellers).

Where would you draw the line, Mr. Editor? In the same number of the WEEKLY that criticises my "shorthand," I find the editor speaks of "auditors" and "educators;" Dr. Hodgins of "Inspector;" Rev. Mr. Ballantyne of "teacher;" J. G. Whittier of "logger;" your art critic of "designer" and "painters;" Richard Grant White of "measurer" and "philologist;" while in the same number we have "lecturer," "philosopher," "annunciators," etc. etc.

Very interesting, in this connection are the remarks of Richard Grant White (p. 108) on the origin of the word *chloroform*, and Mr. White is a good authority (*vide* editor's Notes and Comments, p. 98). "*Chloroform* is so called because it is, or is supposed to be, a chloride of formyl which is the base of formic acid. It was desirable to have a convenient name for this substance, and the name was made by writing the first syllable of *chloride* or *chlorine*, with the first syllable of *formyl*; whence we have *chloro-form*." Did my phonological sin consist in writing the first syllable of *shorthand* with the last syllable of *writer*?

Pardon a closing observation. This is the age of invention and development. Many of the facts and conclusions stated in Mr. Edison's article on the Telephone and Electric Light were unknown a few years ago; and as he discovers new facts and new applications of old principles, he must needs have new words by which to convey his ideas. So with every new industry; type-writing is a modern development. It needs a nomenclature. The name *type-writer* was given to the machine; the act of writing, and also the written manuscript (or typescript) are called *type-writing*; the one who writes is variously called a typer, typist, *type-writer*, *type-writer*, *type-writer operator*. In like manner we speak of *shorthand* as the art-science (is that a proper word?) by which we report; *shorthand* is the artist, or artificer, or art-scientist who does the *shorthand*; and a speech (spoken by a speaker, or deliverer, or orator, or haranguer—if these words be allowable) would, when finished, be said to have been *shorthand*.

Now, if the editor is to be our mentor, will he also kindly assume the office of lexicographer to the progressive public, and give us a coinage

which shall, while convenient, be made from the pure metal, bearing the stamp of the English Queen in proof of accordance with the Queen's English, and such legends as are essential to give it etymological value? Otherwise the telegrapher, the photographer, the telephonist and the short-hander will poison the "well of English undefiled" with their base metal.

Yours, for progress,
THOS. BENGOUGH.

Toronto, Feb. 16, 1885.

Examination Papers.

GEOGRAPHY.

JULY, 1878.

1. What and where are Hecla, Tornea, Guayaquil, Everest, Duluth, San Juan, Cologne, Cronstadt, Besika, Greenock, Aboukir, and Selkirk.
2. What railways converge in Toronto, and what important towns and cities, not distant more than 100 miles, are accessible by rail from Toronto.
3. Define the terms equinoctial, meridian, sound, springtide, and earthquake.
4. What is the general course of the following rivers, and where do they empty:—Saugeen, Hudson, Yellowstone, Dwina, Vistula, Ronnechere, Euphrates, and Saluin.
5. Outline that part of Europe bordering on the Mediterranean Sea, indicating and naming all the important islands, capes, bays, and straits.
6. Name the Provinces of the Dominion in the following order:—
 - (1) Consecutively in regard to position, beginning with the most easterly.
 - (2) Consecutively in regard to size, beginning with the smallest.

DECEMBER, 1878.

1. Define Longitude, Physical Geography, Zone, Tropic, Ecliptic, Orbit of the Earth.
2. Name the States of the American Union that border (i.) on Lake Michigan, (ii.) on the Gulf of Mexico, (iii.) on the west bank of the Mississippi River.
3. Name the Provinces which form the Dominion of Canada, with the capital and chief exports of each.
4. Name the principal islands in the Baltic and Mediterranean Seas and the countries to which they belong.
5. Name the principal rivers, the great mountain chains, and the largest cities between Siberia and the Indian Ocean.
6. State the position of the following:—Cities—Chicago, Detroit, Kingston, St John. Rivers—Rhine, Mersey, Shannon, Ohio. Capes—Passaro, Wrath, Bon, Lopatka. Straits—Sunda, Bass, Cooks, Juande Fuca. Islands—Philippine, Kurile, St. Helena, Santa Cruz.

JULY, 1879.

1. Define crater, inlet, tropic, capital, and promontory.
2. Through what waters, and near what large cities would you pass on a trip from Albany to Montreal, touching at Cape Race?
3. Outline the coast of South America from Panama to Cape Horn, showing capes, rivers, &c., neatly printed in their proper places.
4. What and where are Seugog, Manitoulin, Hudson, Mobile, Pentland, Malor, Mendina, Lipari, Yapura, and Tchad?
5. Suppose yourself at Winnipeg, with instructions to visit the capital of each Province lying eastward, describe your line of travel, naming railroads or water route by which you would go.
6. Where, and how situated, are the following cities:—Kingston, Chicago, Boston, Halifax, New Orleans, Dublin, and St. Petersburg?

DECEMBER, 1879.

1. Define Meridian, water shed, bay, frith, and zone.
2. What and where are Athabasca, Nelson, Chignecto, Restigouche, Gatineau, Temiscaming, St. Hyacinthe, Quinte, Chesapeake, Sacramento, Champlain, and New Orleans?
3. Where do you find the following natural productions in greatest abundance:—Cotton, copper, coal, coffee, tin, gold, furs, and grapes?
4. Say you embark at the Isle of Man on a voyage to the mouth of the Volga. Through what waters, and near what capes and islands would you pass?
5. Draw a map of the coast of Asia from Behring's Straits to Cape Comorin, showing all the important physical features with their names neatly printed upon them.
6. Locate the following:—Obi, Papua, Zambezi, Tunis, Morea, Cyprus, Venice, Lyons, Copenhagen, Borneo, Cheviot Hills, Crimea, Quito, Port-au-Prince, Trinidad, and Luffoden.

JUNE, 1880.

- Define Watershed, Frith, Delta, Horizon, Axis of the Earth, Polar Circles, Ecliptic, First Meridian.
2. (a) Why are the days longer in Summer than they are in Winter in the Northern Hemisphere?
(b) What causes the change of seasons?
(c) Why does the sun appear to rise in the East?
 3. Trace the following rivers from their rise to their outlet, and name the principal cities on their banks:—Danube, Rhine, Ganges, St. Lawrence, Mississippi.
 4. Name the cities of Ontario, and give the situation of each.
 5. Over what railroads would you pass in going (i.) from Hamilton to Peterboro'; (ii.) from Collingwood to London?
 6. What are the chief natural productions of Manitoba, Nova Scotia, Southern States of America, France, China?
 7. Where are the following:—Islands—Malta, Anticosti, Ceylon? Capes—de Comorin, La Hogue? Bays—Verte, All Saints, Table?

BOOKS RECEIVED.

- Orcut, Hiram, LL.D., *School Keeping: How to Do It*. Boston: New England Publishing Co.
- Monteith, James, *Boys and Girls' Atlas of the World*. New York and Chicago: A. S. Barnes & Co.
- Burgess, Wm., *The Liquor Traffic and Compensation*. Toronto: Rose Publishing Co. Price 10 cents.
- Rev. F. R. Beattie, M.A., B.D., Ph.D. *An Examination of the Utilitarian Theory of Morals*. Brantford: J. & J. Sutherland.
- Chaucer: *The Tale of the Man of Lawe*; with Life, Grammar, Notes, and an Etymological Glossary. From W. & R. Chambers, London and Edinburgh.
- Chambers' Historical Readers. *Senior English History*, from the earliest times to 1884. For Standards V. VI. From W. & R. Chambers, London and Edinburgh.
- McRae, Charles, M.A., formerly scholar of Exeter College, Oxford, and sometimes Assistant-Inspector of Schools; *Materials for Object Lessons*. From W. & R. Chambers, London and Edinburgh.
- Mackay, John Sturgeon, M.A., F. R. S. E., Mathematical Master in the Edinburgh Academy; *The Elements of Euclid*: Books I. to VI., with Deductions, Appendices, and Historical Notes. From W. & R. Chambers, London and Edinburgh.



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 no one will be written of whose consent has not been obtained.
 Mr. Lowell will be treated of by Thomas Hughes—author
 of "Tom Brown's Schooldays," and one of the American
 Minister's most intimate friends. Mr. Whittier is written
 of by Mrs. Harriet Prescott Spofford, and Mr. Curtis by
 George Parsons Lathrop. Alice Wellington Rollins will
 tell how Mrs. Jackson ("H. H.") lives at Colorado Springs,
 and Roger Riordan has written of Mr. Burroughs at
 Esopus. Other sketches will be announced from time to time.

Contributors:

Prof. C. A. Young, Prof. W. D. Whitney, Walt Whitman,
 Charles Dudley Warner, Edith M. Thomas, Prof. W. G.
 Sumner, R. H. Stoddard, E. C. Stedman, Dr. Philip Schaff,
 Alice W. Rollins, W. J. Rolfe, Prof. Ira Remsen, J. H.
 Morse, D. G. Mitchell, Brander Matthews, Emma Lazarus,
 Geo. Kennan, Julia Ward Howe, Dr. O. W. Holmes,
 "H. H.," Prof. J. A. Harrison, Constance Cary Harrison,
 Joel C. Harris, Prof. A. S. Hardy, Edward J. Harding,
 E. E. Hale, W. E. Griffith, Capt. F. V. Greene, Edmund
 Gosse, R. W. Gilder, Sydney Howard Gay, A. S. Gatschet,
 H. H. Furness, O. B. Frothingham, Prof. Geo. P. Fisher,
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