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TORONTO, NOVEMBER 4, 1886.

THE *Week*, remarks as follows on the affiliation of Victoria College: "It is a red letter day in the annals of Canadian education on which the first step is taken towards University Confederation by the transfer of the Methodist College from Cobourg to Toronto. The first step is not likely to be the last. Trinity College will, in time, find that its basis is too small for a separate University; the abler and the more active-minded are the members of its staff, the more conscious they will be of that fact, and though it seems to be anchored to its present site by its new and beautiful chapel, even that tie will hardly prevail in the end over the vital interest of the institution. Queen's will probably be more obstinate, but Queen's will come in at last. It cannot possibly hold its own in the end against a

great Provincial University. While Principal Grant lives, his vigorous personality will probably remain unsubdued. Then softer influences will steal over the heart of Queen's, otherwise Knox will expand and become the Presbyterian College. It is needless to rehearse the arguments which have prevailed in the case of Victoria, or to demonstrate again that a combination of our resources is indispensable to the production of anything really worthy of the name of a University. The lingering fear as to the danger to be encountered in the scientific lecture rooms of a secular University by religious faith will, we are persuaded, prove unfounded. At Oxford and Cambridge, the Universities of the Anglican Clergy, there is sufficient sensitiveness on this point, yet we are not aware that there has been any complaint, though the tendencies of scientific thought are exactly the same in these as in other professoriates. * * * The Province may be congratulated on the transfer of a body of students, destined to wield so much influence, from the close atmosphere and the dusky shade of the local Seminary to the free air and broad daylight of the National University. A special vote of thanks is due to Dr. Dewart and Dr. Potts, the latter of whom, we rejoice to see, has accepted the Educational Secretaryship of the Methodist body. It must be extended to Dr. Nelles, in spite of his mysterious change at the last.

THERE seems no end to the new subjects which theorists are trying to find a place for in the *curricula* of public schools. One day it is drawing, the next hygiene, the next temperance, the next "civics," the next short hand writing, the next industrial arts, the next "business." Where is it to end? On the subject of the introduction of short hand writing a writer in the *Weekly Leader*, waxes warm, thus:—"I have read with pleasure the discussion which has been going on, week by week, in your columns regarding the very important subject of education. It has

without doubt been a fruitful discussion, and in it, I think, your contributors have dealt with the idiosyncrasies of nearly all sensible systems of education. I have, however, been extremely disappointed at the little attention that has been paid to short hand. When the discussion first began I had great hopes that if one subject received more attention than another it would be shorthand: but the majority of your correspondents seem, I think, to have fought shy of ever mentioning it. The reason of this cannot surely be that they think it unworthy of a place in this discussion, or that it is not a fit subject to be included in the curriculum of educational establishments. On the contrary, I take it that it is due, firstly, to their lack of knowledge of the subject, and secondly (another indication of the conservative sentiments of the English people), their hesitation to accept anything new, and especially that of which they have not a thorough and complete mastery. The introduction and propagation of Mr. I. Pitman's Phonography has been little less than an intellectual revolution. The good that the inventor of Phonography has done for education is immense, and the doors that a system of knowledge has opened out to young men is almost beyond belief. Years ago Mr. John Bright said that the public benefits to be derived from Phonography were incalculable. The truth of his remarks has been for a long time apparent; the public benefits that have been derived from it are almost beyond calculation. The times have changed, and to keep pace with them in this altered condition is an absolute necessity."

A SYSTEM of school farms we learn from the recently published report of the Commissioners of National Education in Ireland, is in operation in Ireland. Their number at present is sixty three, in which 688 pupils were examined in agriculture last year. Dairy management is also taught in these agricultural institutions, and, apparently, with most gratifying results.

Contemporary Thought.

A CURIOUS illustration of unexpected commercial development which may be expected to flow from the Exhibition has come under notice. The bales of prairie hay, which are conspicuous on the Agricultural Trophy, have not failed to attract attention, and have prompted the question whether or not it would be possible to arrange for the importation of prairie hay from the North-West to this country. Inquiries are being made in connection with the matter; and if, as seems likely, the scheme should prove feasible, it is difficult to place any limit upon the dimensions which this new trade might quickly assume. —*Ex.*

THE proposal of the Prince of Wales that the Queen's Jubilee should be celebrated by the establishment of an Imperial Institute as the outcome of the present colonial Exhibition, has naturally continued to attract much attention during the past week. There would seem to be a belief among the exhibitors and others interested in the possibility of the Exhibition being re-opened next spring in somewhat of its present shape, and continued through the year, whilst arrangements of a more permanent nature are being completed. In other words, the belief would seem to be that the present exhibition and its Royal commission will cease early in November, and that the display of next year will be under the auspices of the permanent institution. —*Canadian Gazette.*

PERHAPS the most interesting thing (says the *Pall Mall*) in the address which Sir Spencer Wells delivered to the Sanitary Congress, was his contribution to the over-pressure discussion. He is inclined to attribute most of the over-pressure to the sanitary success which has, of late years, reduced infant mortality. The children who die or sicken under school work to-day are those who, a generation ago, would have died off-hand. They are the survivors of the least fitted. They are not so strong as the average, but they have to submit to the average routine, and they drop out of the ranks in the struggle. If this be all, have we gained so very much by the boasted "march of civilization"? Is it so great a good to prolong human agony? A philosopher might surely argue that there was more genuine kindness, after all, in the Spartans who straightway "exposed" their sickly children, than in the English, who cheat death for a while of his prey only to pay him his own with the interest of a few years' added misery and sickness.

LET what may become of the political connexion, the nobler dominion of the mother country over her colony, and over all her colonies on that continent, those which have left her side as well as those which still remain with her, is assured forever. The flag of conquering England still floats over the citadel of Quebec; but it seems to wave a farewell to the scenes of its glory, the historic rock, the famous battle-field, the majestic river which bore the fleet of England to victory, the monument on which the chivalry of the victor has inscribed together the names of Wolfe and Montcalm. For no British redcoats muster round it now. The only British redcoats left on the continent are the reduced garrison of Halifax. That morning drum of England, the roll of which, Webster said, went round the world with the sun,

is now, so far as Canada is concerned, a memory of the past. But in blood and language, in literature and history, in laws and institutions, in all that makes national character and the higher life of nations, England, without beat of drum, is there. Nor—if one may be believed who has lived much among Americans, and watched the expression of their feelings—is the day far distant when the last traces of the revolutionary feud will have disappeared, when the hatred which the descendants of British colonists have been taught to cherish against their mother country will cease to exist, even in the most ignoble breast, and when Westminster Abbey and Westminster Hall will again be the sacred centre of the whole race. —*Goltwin Smith.*

MERELY to state these possible alternatives of the stimulation of a portion of the brain is sufficient to bring up vividly into view the enormous and almost inconceivable complexity of that wonderful natural mechanism. Imagine for a moment a machine so delicate that it is capable of yielding us the sensation of a strawberry-ice, the æsthetic delight of a beautiful picture, the intellectual perception of the equality of the angles at the base of an isosceles triangle, the recollection of what we all said and did the day we went for that picnic to the Dolgelly waterfalls, the vague and inconsistent dissolving views of a disturbed dream, the pain of toothache, and the delight at meeting once more an old friend who has returned from India. The very mention of such a complicated machinery, let alone the difficulty of its possession of consciousness, is enough to make the notion thus nakedly stated seem wild and absurd. Yet there the machine actually is, to answer bodily for its own possibility. You can not cavil at the accomplished fact. It may be inconceivable, but at any rate it exists. Logic may demolish it; ridicule may explode it; metaphysics may explain it away; but, in spite of them all, it continues still imperturbably to be, and to perform the thousand and one incredible functions which argument conclusively and triumphantly demonstrates it can never compass. Call it materialism or what else you like, experimental physiology has now calmly demonstrated the irrefragable fact that on the brain, and on each of its parts, depends the whole of what we are and what we feel, what we see and what we suffer, what we believe and what we imagine. Everything that in our inmost souls we think of as *Us*, apart from that mere external burden, our body, is summed up in the functions and activity of a single marvellous and inscrutable organism, our human brain. —*Grant Allen in Popular Science Monthly.*

THE substance of his [Richard Grant White's] attainments is to be found, of course, in the various essays, prefatory either to the general work or to the individual plays and poems, which conduce so much to the value of his version of Shakespeare in the way of expansion, criticism, and information; and in these his views are set forth with most modesty, succinctness, and moderation, and his knowledge is deployed with most swiftness and effect. They form, however, only a small portion of his contributions to Shakespeare literature; very much of his labour in his chosen subject was off-hand work, and must be sought in his magazines to which he devoted his less serious

moments. Such articles—and their number is legion—usually present some single phase of a Shakespeare theme; and no matter how dry and formal the topic in itself, he makes it entertaining. For it is a distinction of Mr. White's that he always interests; he has the secret of pleasing. His style is wonderfully firm and close-knit; his facts are cold as an iceberg and hard as a flint; and he strews the mental way of his readers with the native nuggets of Yankee sense. His individuality counts for more than all. He was himself a character, in the special meaning of the word; one of those impenetrable pieces of nature's workmanship which are malleable by no external influence of culture, society, or circumstance. Such persons cannot open their lips without some self-exhibition; whether their solitude is of the village or of the study, they always speak from within, and echo no man. Mr. White, who was as tenacious of his peculiarities as an Englishman, stamped them upon his writings; and it is due to this that when one reads his words it is, to an unusual degree, as if one heard him speaking. When a man of this sort has the gift of literary expression, he will be a readable author, whatever deficiencies he may have; and this Mr. White was. —*Atlantic Monthly.*

LADIES' colleges should aid in raising the average standard of our female teachers. Women, like men, should be paid in proportion to the intrinsic value of the work done. The good work done by our ladies' colleges would be even more satisfactory if a more rigid entrance test were exacted, and if none but experienced and trained teachers were employed. By a course of lectures on industrial science the young ladies should be led to take a general outlook over the many vocations open to women in commercial, manufacturing, artistic, and philanthropic pursuits. Domestic economy should receive due attention; and lectures on cognate topics might be added, such as "Nourishing foods—how to care for and how to cook;" "Processes of the digestive organs, and causes leading to indigestion;" "Heating, lighting and ventilation;" "Care of the sick," etc. Ladies' colleges should be brought into closer relation to our general school system. My suggestions, in a word, amount to this: Do what you can in the work of elevating the teaching profession. This will open better positions to your graduates, provide you with better teachers, and benefit the country at large. Do what you can to fit for entering professions those of your students whose taste, talents and circumstances warrant such a course. Do what you can to prepare your students for earning an honest living, if necessary, in the various vocations of life. Do what you can to increase their respect for home-life and their practical fitness for some day presiding in a happy home. To the young ladies I would say—following up these suggestions—*look ahead*: a homely phrase, but one that expresses the duty you owe to yourselves, to your friends, to your country—the duty of honestly considering what you are aiming at. Rest not contented with less than a thorough preparation for what you may be, for what you probably will be, for what you *ought* to be, in your future life. Do not be satisfied with living at random. Let your aim be marked by deliberate intention. Make your culture broad, and deep, and elevating; but fail not to make it *practical*. This you can do with exquisite good sense, and without compromising the most delicate refinement. —*D. C. McHenry in his address, delivered at Ontario Ladies' College, Whitby, June 22nd, 1886.*

Notes and Comments.

ON Saturdays, since the first of May until a week or two ago, Mr. Dearness, J. P. S., East Middlesex, has been giving the teachers a course of lessons on botany—chiefly on the morphology and classification of plants. The ponds of Westminster and the broken and varied banks of the Thames make the neighbourhood of London an excellent botanizing ground. The class make good use of its opportunities, and during the season examined typical specimens of the greater number of the phanerogamous orders given in Spotton's text-book.

THE salaries of the teachers in Ireland, although falling considerably below the corresponding amounts in England and Scotland, can hardly be called bad, and they are evidently rising. The average for principal masters is about £80 a year for all classes (against £131 England and £155 Scotland), for principal mistresses under £67 (£79 England, £75 Scotland) assistant masters under £49 (£121 England, £135 Scotland), and assistant mistresses £39 (£74 England and £65 Scotland). But there is a regular pension fund in Ireland, with which the vast majority of the teachers are connected.

THE religious question in Ireland is met by the use of two kinds of schools—mixed (where there are Roman Catholics and Protestants together) and unmixed (where there are Roman Catholics alone or Protestants alone, as the case may be). There are 2,755 mixed schools (where Roman Catholics number 94 per cent. of all the scholars) taught exclusively by Roman Catholic teachers, 1,240 mixed schools (where Protestants number about 86 per cent. of all) taught only by Protestant teachers, and 75 schools (with about an equal proportion of both denominations) taught by Roman Catholics and Protestants conjointly. Besides these, there are 3,829 unmixed schools, 3,072 for Roman Catholics under Roman Catholic teachers and 757 for Protestants under Protestant teachers. The figures are taken from the recently published report of the Commissioners of National Education in Ireland.

THE Committee on Christian Education has reported to the Convention of the Protestant Episcopal Church of the United States, suggestions in the line of their functions. It declares that there is no system of education complete which ignores the sources of the Christian faith and the obligations of Christian morality. It was the Church's duty not to create education, but to Christianize it, not to lavish benevolences on institutions where its own principles were rejected. To lift up the Church institutions there must be endowments, outspoken interest, and, thirdly, a practical method of pro-

moting the cause might be the assembly of the heads of the Church schools and colleges into an association for mutual council on questions of instruction, discipline and worship, and so move towards the final erection of a great Church university worthy of the property and intelligence of the Church. And the committee accordingly recommended that the existing committee on Christian education in this house, with power to fill vacancies, be continued until the next session; to devise means to direct public attention to our schools and colleges, and to invite all educators in charge of schools to meet together at an assigned and practical place, to consult together for the furtherance of Christian education. The report was unanimously adopted.

PRESIDENT GILMAN, in a recent address, speaking of the influences of the University, said:—The history of European universities is yet to be written by one who has the requisite vision, and who can estimate with an accurate judgment the various forces by which they have been moulded, and the various services they have rendered to humanity. But there are many histories of famous foundations, many biographies of illustrious teachers, many surveys of literature, science, and education, many elaborate schemes of organization, and many proposals of reform. The mind of a master is indeed needed to co-ordinate what is thus recorded; to be the Interpreter of the House called Beautiful. But the American scholar need not wait for such a comprehensive work; the American philanthropist need not delay his benefactions until more experience is secured. The centuries speak with many voices, but they are all harmonious. From the revival of letters until now, from the days of Gerson, the great Chancellor of the University of Paris, five hundred years ago, every advance in civilization has been dependent upon the influences which have proceeded from the seats of learning. Their light has illuminated the foremost nations of Christendom. In days to come, more than in days that are past, their power for good will be felt upon the interests of mankind. Let us hope and believe, let us labour and pray that the American universities when they are fully organized may be worthy allies of the strongest and best foundations—steady promoters of Knowledge, Virtue, and Faith.

THE following paragraph taken from the *Canadian Gazette* of the 14th inst., is worthy of reproduction in a prominent place:—The tests of Colonial woods made last week at the works of Messrs. A. Ransome & Co., Chelsea, certainly did much to bring the superior qualities of some of the timbers of Canada before the notice of those in England interested in their employment. Among the Canadian specimens submitted to this practical test were the Douglas fir and

swamp or black ash. Mr. Ransome, in announcing the conclusions at which the experiments had enabled him to arrive, pointed out the suitability of these two classes of Canadian woods, in that they were adaptable to building and joiners' work. The swamp ash was found to be particularly strong, sound, tough, and cheap. Professor Macoan, who subsequently spoke, pointed out that English merchants knew so few Canadian timbers simply on account of their natural indisposition to take a new departure from old habits. The Douglas fir of Canada was, he said, fully equal to the white pine now employed, and when the supplies of the latter were exhausted the former would of necessity take its place. The Douglas fir grew in vast quantities, attained a great height, and tapered very gradually. In their black ash, too, the Canadian possessed a species of timber which would some day be very widely employed, for it had all the qualities of the now favourite white ash, and its supply was unlimited. The Douglas fir could be supplanted in England at £5 a load, and the black ash at the same price as elm or white pine. Other Canadian varieties tested were bitternut, white fir, and iron-wood, all suitable for various forms of joiners' work.

THE following illustration of the necessity of vigilance in the school-room, sent to us by a teacher-in-training at a certain model school, is worthy of publication:—In a certain school-room were two classes—the one had problems in arithmetic, while the other was reading. The teacher noticed two boys in the arithmetic class were doing their work while all the others were talking and making a general noise. She told them that all but those two must stay in at recess. After she had gone on with the reading class, one of these two boys hit the little fellow in front of him, and said, "You've got to stay in." The boy turned partly round and said, "Well, I don't care." This the teacher saw, told the little boy to bring her ruler, and whipped him. The boy across the aisle, while rattling his lead pencil on the desk broke off the point—failing to get a knife from any of the other boys around, he asked the little fellow across the aisle for his; not having one he told the other boy so. The teacher saw him speak again, this time he got a similar punishment, but with one slap extra. The boys near were in great glee, and slyly taunted the little fellow, who was usually good, for getting whipped. The teacher looked round to see where the noise was; her eyes naturally falling on the one who had just been chastised, she saw him talking back to his accusers. Again he was called up and punished. The little fellow was quite overcome by all this, which had taken place within ten minutes. The mistaken teacher went on with the reading, while quietness reigned in the arithmetic class. This is a case in which the teacher failed in vigilance and comparative innocence had to suffer.

Literature and Science.

AT EIGHTY-THREE.

AGE, bleak age it is to me,
A wrinkled crone of eighty-three ;
A peaked chin, cheeks long gone in,
A figure like a shrunken tree,
On which the leaves all withered be.

Fair maiden with the peach like cheeks,
That counteth life by days and weeks,
Where will you be at eighty three?
Where will be then those sparkling eyes,
In which a world of coquetry
And sweetest hidden meaning lies,
When you are aged eighty-three,
When life is but a withered tree,
Dead at the top at eighty-three.

Oh, laughing maid, oh, wrinkled crone,
Oh, sparkling eyes, oh, shrunken bone.
Youth looks forward, Age looks back.
Life is the same for you or me,
If love but once have crossed our track,
Life can be sweet at eighty-three,
For life is all a memory.
Autumn still may dream of spring,
And sweetest blossoms backward bring,
Through all the bleak wind and the rain,
If love but visit us again,
Where dead leaves cling at eighty-three.

'Tis sad to outlive all our hopes
And dreams that withered on the slopes,
Like dead leaves from life's tree,
But yet to us 'tis sweet to know,
That as we old and older grow,
That younger in heart are we,
And still that hand in hand with love,
Beneath the shining stars above,
We walk at eighty-three.

Oh, who is he would measure age,
By wrinkled brow or peaked chin?
But rather by the heart within,
That throughout all life's tempest rage,
Still kept its youthful purity,
With memories at eighty-three.

WILLIAM WILFRED CAMPBELL.

West Claremont., N. H.

THE PHYSIOLOGY OF SLEEP.

THE wonderful phenomenon of sleep, to which a long-life familiarity has so accustomed us as to blunt our powers of observation, is, nevertheless, at once so interesting, so important, and so ill understood a subject, that further information thereon cannot fail to be appreciated. The medical man, it is true, has generally, except in his own person, more to do with sleep as a diseased or absent condition; but in his endeavours to cope with a symptom, which, like the pyrexia in fevers, may in itself determine a fatal result, he cannot but derive aid and assistance from a study of the details of processes which precede, accompany, and follow this condition. Since attention was first turned

to the investigation of the physiology of sleep, numerous contending and often absurd theories have been formulated, with a view of accounting for its rhythmical occurrence: the unconsciousness, in varying degrees, which accompanies it; and its bearing on the economy. The very nature of the subject, however, seems to have predisposed those who devote themselves to its study to leave the arid path of scientific research and deduction in favour of the more flowery and popular method of dishing up recitals of the weird and the extraordinary, as exemplified in those aberrations or varieties of sleep known as somnambulism, hypnotism, etc.; and the result has been the publication of numerous treatises, containing much that is both curious and interesting, but which from a physiological or a pathological point of view, are not of much value. The perusal of a really scientific work on the subject, however, only proves once more the truth of the adage that truth is stranger than fiction. To the methodical and careful observer, the proper means of research yield results which are incomparably more curious, and at the same time, instructive, than the pseudo-facts with which some writers fill their books. Each successive gradation in sleep is marked by the inclusion of a nervous system which is for the time being shut off, so to speak, from participating in the general life-function of the individual until, when the maximum intensity is attained, nothing is left but the purely animal—one might almost say the vegetative—life. Sleep of this degree of intensity, although a perfect normal process, is not, in health, of long duration. After the lapse of a variable space of time, the systems one by one resume their function, until finally the sum of perceptions brings about the condition of awakening. As a natural consequence of these variations in perceptive powers, the character of the sleep is altered, according to the period. From the deep unconsciousness of complete repose, when every sense is in abeyance and the will rendered nugatory, the cerebrum is gradually aroused, first to the dim appreciation of the influences of external agencies, followed in due course by a return of perceptive power in the sensorium, and the cessation of sleep. The brain shares in the need, which is everywhere apparent, of periods of rest. The products of cerebral activity accumulate more rapidly than they are eliminated, and a period therefore arrives when the tissues are no longer able to do their work. The result is an invincible feeling of indisposition to exertion, physical or mental. The temporary and involuntary cessation of activity is at once followed by a diminution of the blood-supply; the anemia so induced being, therefore, a consequence, and not a cause, of the state of repose. The various parts of the nervous system are not all involved simultaneously or to the same

extent. The centres governing voluntary movement are the first to be affected; as seen in the nodding of the head and the closure of the eyelids; and the body, if not prevented, tends to assume the position of repose, determined by the laws of gravity. The special senses soon follow; but here, again, they are not abrogated *en masse*. Sight is the first to go, the stimulus no longer reaching that portion of the cerebrum where it can give rise to a definite sensation even where the closure of the lids has not shut off external stimuli altogether. Hearing and smell are remarkably persistent, and, except in the deepest sleep, may be said to be only dulled, and not extinguished. Everyone is familiar with the ease with which sleep is put an end to by unaccustomed noise even of slight intensity, or better still, by the cessation of any monotonous sound, as for instance, the awakening of travellers by rail or steamboat or any stoppage of the train or machinery. Instances are on record, too, where the inhabitants of a house have been aroused simply by the smell of tobacco indulged in by inexperienced or incautious burglars. The persistent sensibility of these senses may to some extent be accounted for by the fact that they are not shut off from communication with the outside world, as are, for example, the eyes. To allow sleep, or, at any rate, quiet sleep, a certain harmony must exist in the condition of all the organs, which must, so to speak, be turned to the sleep tone. If one organ be in a state of activity, or, on the other hand, its condition be abnormal in some other way, the sensorium refuses to abdicate its control. This is familiar to us in the case of cerebral activity, or cold feet at bed-time, both being inimical to sleep. Inasmuch, therefore, as insomnia may result from either set of causes, we can either employ drugs, such as opium, which act directly on the nerve-centres, and so bring about sleep; or we may resort to medicines like hypnone, which is said to favour sleep, rather than induce it, by allaying the irritable or hyperæsthetic condition of certain organs or parts. The study of the causes and treatment of insomnia, however, does not enter into the compass of this article; but it is one which can only be satisfactorily pursued after competent knowledge has been acquired of the normal process in the state of health, undisturbed by dyspepsia or cerebral disorganization.—*British Medical Journal*.

WHAT are you reading? Your teaching will be coloured by your personal reading, tinted with more brilliant hues if you are reading the best things for mind and heart shaded with ill temper, impatience, fretfulness, etc., if you are reading frivolous, aimless, simply excitable things.—*Ea*.

Special Papers.

SCIENCE TEACHING.

(Read before the Ontario Teachers' Association.)

IN discussing this topic, I do not propose to do much more than to lay before you some of the opinions entertained by others respecting Science Teaching elsewhere, and leave it to you to judge how far if at all the statements advanced would apply to Science Teaching in our own Province. Even if you are not now inclined to make the application or comparison, the presentation of opinions respecting this topic entertained in older and more advanced communities, can be profitably brought forward however much we would like to think that in this matter we are far in advance of most of the nations of the world.

It is contended that Science Teaching should have a place and a prominent one in a national system of education on account of the utility of the knowledge got from it, for example:—

Knowledge that renders "our growth more perfect, decay less rapid, life more vigorous, death more remote." Knowledge of the world we live in has much to do with such results. "Any one who tries to live upon the face of this earth without attention to the laws of nature, will live there but for a very short time, most of which will be passed in exceeding discomfort; a peculiarity of natural laws as distinguished from those of human enactment, is that they take effect without summons or prosecution * * and thousands are dying daily or living miserably because men have not yet been sufficiently zealous to learn the code of nature." From the utilitarian point of view, knowledge such as this is of great value, first from the saving of life. Many die each year whose deaths should have occurred more remotely. Thus 50 per cent. of the deaths from consumption in Ontario yearly are of this character. Canada spends thousands annually to bring people into the country because these living people are regarded as beneficial to the country. Therefore they have a money value. The loss to the community from premature deaths, is very great from a monetary point of view. It is further increased by the drain upon the friends and relatives of the sick by actual outlay, and by diminished power of production through the time spent in caring for the afflicted. From the same point of view this intimate knowledge of ourselves and the world is also valuable in preventing the squandering of means through "credulous confidence in pills, potions and quackish absurdities."

Now all this may be assented to and the question be asked can the Science Teaching in our schools furnish enough of this knowledge to answer the acquirements of our people after school life? Probably not. But they may acquire much and be put on

the right track for getting more. They are made able "to avail themselves of the scraps of science which are constantly set before them" in the literature of the day. The knowledge obtained may bring forth unexpected results and applications. Harrison says of the Science Teaching in the Board schools in Birmingham, "The teaching has evidently been carried home, for an irate landlord visited one school to know what they meant by teaching children that his houses were not fit to live in."

The value of this knowledge is equally or more apparent in the arts.

About thirty-five or forty years ago it was thought to be a grand and paying advertisement for English products, to get up an International Exhibition. The world was to come and admire and buy the manufactures of Britain. The end was attained and more, intelligent foreigners came and also took away British machinery, employed workmen who had received a better training, workmen with more intelligence than the British workman, and the British public began to buy from the foreigner.

Roscoe, president of the Chemical Society, a few years ago in a lecture before the Royal Institution of Great Britain, brought forward some facts which appear to bear strongly on this value of Science Teaching. Speaking of alizarin, a substance produced from a dirty waste material which less than twenty years ago was used as axle grease or burned, he said that in 1880 the saving effected by the use of alizarin was considerably over \$20,000,000. In the same address he said:

"To Englishmen it is a somewhat mortifying reflection that whilst the raw material from which all these coal-tar colours are made, are produced in our country the finished and valuable colours, are nearly all manufactured in Germany. The crude and inexpensive materials are therefore exported by us abroad, to be converted into colours, having many hundred times the value, and these expensive colours have again to be bought by English dyers and calico printers for use in our staple industries. The total annual value of manufactured coal-tar colours amounts to about £300,500,000 (\$17,000,000 say), and as England herself, though furnishing all the raw material, makes only a small fraction of this quantity, but uses a large fraction, it is clear that she loses the profit on the manufacture. The causes of this fact, which we must acknowledge, viz., that Germany has driven England out of the field in this important branch of chemical manufacture, are probably various. In the first place there is no doubt that much of the German success is due to the long-continued attention which their numerous universities have paid to the cultivation of organic chemistry as a pure science, for this is carried out with a degree of completeness, and to an extent to which we in England are as yet

strangers. Secondly, much again is to be attributed to the far more general recognition amongst German than amongst English men of business of the value from a merely mercantile point of view, of high scientific training. In proof of this, it may be mentioned that each of the two largest German colour works employs no less a number than from twenty-five to thirty highly educated scientific chemists at salaries varying from £250 to £500 or £600 per annum" (roughly \$1,200 to \$3,000). It is very evident that these millions slip through the fingers of Englishmen into the hands of Germans largely because there is more scientific knowledge in Germany than in England. Prof. Meldola says that England distils *one-half of the whole* amount of tar produced in Europe, but that the average German production of derived colours is six times that of Britain. The name and fame of Pasteur has spread over the world. His work may be briefly touched upon as illustrating the economic value of science. Pasteur "took up the investigation of the diseases of silkworms at a time when the silk husbandry of France was in a state of ruin." He soon discovered the cause of the disease, the first thing towards finding out how it might be avoided. How valuable his work was from a pecuniary point of view may be judged from the fact that when an establishment in Austria, belonging to the late Prince Imperial, was placed under his management, the net profit was, I believe, for one year twenty-six millions of francs. This result was obtained in face of the fact that the culture of the silk-worm was previously carried on there at a serious loss.

His investigations of splenic fever were so fruitful of good results, that up to 1883 the remedy he suggested for its prevention was made use of on nearly 500,000 animals.

His later triumph has been in dealing with hydrophobia, and though the economic value can not be estimated, the success seems almost equally certain and gratifying.

It is not surprising then an American educationist should say, "*beyond all doubt, scientific men have done, are doing, and will do more for the advancement and wellbeing of our country than any other class of her citizens.*"

The *Globe* of May 13th, 1885, reports the Hon. the Minister of Education, at the closing exercises of an Art School in this room, as speaking of the millions of dollars worth of manufactured goods imported into Ontario, upon which skilled labour was employed, and I suppose pointing out some portion of it that might be done by our own people through the labours of the Art School. Undoubtedly, as we have seen in the case of the coal tar industry in Germany, scientific knowledge enhances the value of the manufactured product, and going hand in hand with art in many branches of trade, the result is most satisfactory. Art is receiving

more and more attention in our Province, and this is right. In England there appears to be a sort of a matrimonial bond between this subject and science. Thus they speak of Science and Art as inseparable. Fisk, who was long connected with the drawing-classes of University College School, London, says, "Accept this as a fact, *Art cannot be divorced from science*, for it is science which teaches us to see truly, and by art we render the truth we see." Let there be no divorce; it is unnatural.

I have sometimes asked myself: Was not the following state of affairs in a measure due to the want of science? About the time Ontario publishers were on their metal preparing rival readers, I was informed by one of them that he incurred great expense and experienced the greatest difficulty in finding men who could turn out the quality of electrotype he wanted, and of the quality that was produced elsewhere; I believe he was not satisfied with the best work done in this country.

Further, scientific appliances have become so essentially a part of common life, as well as of manufactures, that the knowledge springing from Science Teaching is both important and desirable, so much so that the three R's must soon take in another member. The spread of scientific application for the comfort of life is so great and so rapid that I think I am safe in saying that the most northerly town in Ontario has now a scientific application in public use to an extent and completeness the greatest cities in America could not attain a few years ago. Nearly everything about our homes, whether useful or ornamental, has received touches from the magic hand of science. Our fire alarms, our telegraph and telephones, are nothing if not scientific.

Look for it where we will, even in the most unexpected place, the mark of science is to be found. Who would ever expect to find the grimy iron-worker invoking the aid of the spectroscope? or the burly brewer the microscope? Truth is stranger than fiction! Has not science in the hands of Bessemer and Siemens been applied to the production of the steel rails on which our railway coaches roll so smoothly and safely?

Valuable as the knowledge obtained through Science Teaching undoubtedly is, from many points of view, yet the crowning glory is that it cultivates the power of observation, of reasoning from the facts obtained by the use of the senses; of thinking definitely and correctly; and of at least respect for truth. Worthington, of Clifton College, has said of one science subject: "The study has, even on the mass of boys, an *unexpected influence, as much moral as intellectual*, which is shown in an increased and increasing respect for precision of statement and for that form of veracity which consists in the acknowledgment of difficulties."

This value is described by another in these words: It supplies "a general intellectual training so as to fit students for acquiring knowledge for themselves, as in practical life *ability to acquire* is preferable to simple possession, so in intellectual life the same preference exists but in a greater degree."

The latter part of the following quotation from an address by Dr. Armstrong, of Finsbury Technical College, expresses similar views respecting the great value and influence of Science Teaching on the intellect. He says: "However fully it may be admitted by the few, that it is important, nay, essential, that ALL members of the community, whatever their *station or occupation*, should, during their school career, receive some instruction in the elements of natural science, the general public have not as yet had brought home to them with sufficient clearness, that just as a knowledge of foreign languages is essential to all who are brought into intercourse with foreigners, so in like manner is a correct knowledge of the elements of natural science of direct *practical value to all in their daily* intercourse with nature. . . . But it is also and mainly on other and far higher grounds that we should advocate universal practical teaching of natural, and more particularly of the so-called physical sciences, viz., that it tends to develop a side of the human intellect which I believe I am justified in saying is left uncultivated, even after the most careful mathematical and literary training—the faculty of observing and reasoning from observation and experiment."

The position taken by Armstrong in this extract is heartily endorsed by Shenstone, an English master, who does not stop at that, but says: "The main body of school-masters are so completely without any science training that it is very difficult for many of them to see its necessity or even its advantages. The younger generation of masters . . . have not, like their predecessors (at Rugby, Clifton, Taunton, and elsewhere), had an opportunity of observing the gain of life and general intelligence which followed the introduction of science in the regular school work, in those schools in which it was taken in hand seriously and with enthusiasm. Others, again, have more or less forgotten. Consequently it is still necessary to point out that excellent as is the training given by the mathematical and classical teaching of our schools, yet by itself it is not enough. No excellence in the *method* of teaching classics and mathematics will compensate for this, 'that they fail to develop the faculty of observing and reasoning from observation and experiment.'"

"Scientific education gives the highest mental training," says the chief of the United States Geological Survey. GEO. BAPTIE.

(To be continued.)

Methods and Illustrations

LITERATURE FOR ENTRANCE INTO HIGH SCHOOLS.

THE VISION OF MIRZA.

THE vale of misery—the vast tide of eternity rolling along its bed—the bridge of seventy sound and some broken arches—the mists at either end forbidding us to see whence we came or whither we go, form perhaps the most complete and most beautiful of all the allegories which any literature possesses. What millions have read it, and have afterwards, sooner or later, in their inevitable course, met one of its scimitars, or fallen through one of its pitfalls. How many, in turn, have commiserated the disagreeable position of the elderly unfortunates, hobbling over the broken arches, and yet, arriving at these selfsame arches themselves, rather wish to hobble longer than to disappear in the unknown gulf. Speaking of Addison's writing, Johnson, in his ponderous way of saying things, remarks that "whoever wishes to attain an English style, familiar but not coarse, and elegant but not ostentatious, must give his days and nights to the volumes of Addison." It is strange that, even in this day of general ability to read, a literature such as ours, possessed of so many beauties, is practically confined to the few. Johnson, Addison, Steele, and their like, are comparatively little read. Forty years ago, princess and seamstress, nobleman and baker's-prentice, alike read and delighted in Scott—now, it is too dry for three-quarters of them. It is worthy of note, and perhaps may give a key to the enigma, that the best books are generally read in the rural districts. In towns, we must read the journals; the appetite acquires a relish for its usual food, and the newspaper, often almost of necessity a mass of turgid diatribe and sensational statement, injures the literary taste of the nation. It is a matter worthy of legislative interference, if legislature knew but how to interfere.

R. W. PHIPPS,

LOCHINVAR.

It is said that even the occasional unconnected pieces with which Scott intermixed his works, prose and poetry, would by themselves have made a splendid poetical reputation for any one. Of these "Lochinvar" is perhaps the most beautiful. In passing, let us glance at the construction of the rhyme, and we shall find each line commence with a short syllable—then a long one then three feet of two short syllables followed by a long one each. There are no mistakes—no variations; each member of every line exactly balances his fellow in the line preceding. How different from the slipshod

verses with which our modern presses teem.

"Lochinvar" is a brilliant little production which lights up a long vista of itself, and shows us as through a window the rough chivalry of the border hundreds of years ago—just before Flodden, in fact. The hero undertakes alone, confident in his good horse and tried sword, a journey which now a railway ticket would more easily secure him. We see the great hall of the Border castle, the great door through which the knight bears off the bride, and are reminded that the hall was then the principal room, and all others very subordinate to it. We are given the fashionable elopement of the period, in that day when might made right, while the list of Border septs—the Forsters, Fenwicks, and Musgraves, who unavailingly pursue, call up a hundred associations of raid and foray, of peel-house and fortalice, of farmsteadings only safe near some castle wall, and of husbandry carried on for five hundred years where the peasant never knew whether he or the foeman should benefit by his labours. The student of literature may observe, in this piece, that it is so highly dramatic as to admit of description by a series of pictures. In all stories, tales, poems, and so on, it is no bad test to ask, "What pictures will they make?" R. W. PHIPPS.

THE RIDE FROM GHENT TO AIX.

A CORRESPONDENT sends us the following additional questions on "How They Brought the Good News from Ghent to Aix":—

1. Where is Ghent, and where is Aix?
2. In what metre is the poem written?
3. What is rhyme? Illustrate from the poem.
4. Line 2. Point out the force of this line.
5. "Lights sank to rest." What figure?
6. "Now the midnight." What figure?
7. Line 7. "Not a word." What case is "word," and why?
8. "Neck by neck." Parse.
9. "Stirrup." Derive.
10. A "whit." Derive and parse.
11. "Half-chimes." What does this mean?
12. Line 19. What figure?
13. "Of a sudden." Parse.
14. "Thro' the mist." What does this refer to?
15. Line 27. "Eye's black intelligence." What does that mean? What figure?
16. "Askance." Give the meaning.

MRS LANGTRY is said to have written, or begun to write, a novel dealing with English life in this country and in London, which she hopes to publish simultaneously in London and America early in November.

THIRD CLASS LITERATURE.

EXAMINATION QUESTIONS SUITABLE FOR CANDIDATES.

II. THE VICAR OF WAKEFIELD.*

High School Reader. p. 127.

1. "Or the town." What is the meaning of this phrase? Could it now be so used appropriately?
2. "Which our retirement would admit of." What was the nature, and what the cause of the family's "retirement"? What is the difference between *admit* and *admit of*? *permit* and *permit of*? Is the *of* necessary? Give examples of other similar collocations. What is the modern tendency with regard to *of* so used?
3. "... the observations that were related in the atmosphere of the play-houses' ... "had all the good things of the high wits by rote long before they made their way into the jest-books." Describe the social habits and customs to which these phrases allude.
4. "... blinded us to his imperfections." What are the "imperfections" of the squire as revealed or hinted at in this lesson?
5. "If the cakes at tea ate short and crisp," etc., etc. Do you think a modern story-teller would convey the impression of Mrs. Primrose's character which one gains in reading this sentence *in the same way*? In other words, does this sentence and the following reveal to you any difference between Goldsmith's method of portraying character, and the modern method?
6. Describe as well as you can what you consider to be the *literary flavour* in the description of the preparations for the picture-painting.
7. "... fifteen shillings a head." ... "and as he wrought with assiduity and expedition, in less than four days the picture was completed." What is the literary value (that is in an artistic sense) of these touches?
8. "And it must be owned he did not spare his colours." What literary merit has this expression over the following which expresses the same fact: "And he painted it in very bright colours"?
9. "Much too large to be got through any of the doors." Is there any inconsistency in this statement with previous statements? Do you know of any other incongruities in the narrative?
10. "A reel in a bottle." What does this mean?
11. "These reports we always resented with becoming spirit." What is the particular Goldsmithian touch here?
12. "Does not want for parts." Explain.
13. Describe in your own words the character of Mrs. Primrose.

*The candidates are supposed to have read the whole narrative.

14. Describe the character of Dr. Primrose, and give your own estimation of it. Had it any weaknesses?

15. What do you consider the particular charm or charms of the "Vicar of Wakefield"? What are its literary merits? Has it any defects or faults; if so, what are they?

A. M.

ANECDOTES OF AUTHORS.*

(Continued from page 634.)

[The following anecdotes of authors are selected from old numbers of *Literary Life*,—a magazine of high literary merit, published at Chicago.]

MR. LONGFELLOW was born in a wooden house in Portland, which is still standing, and which is known to all the children of the city as the first abode of their favourite poet. One day recently, a teacher in one of the public schools, after giving divers moral lessons on Longfellow's beautiful life, asked her pupils if any of them knew where the poet was born. A little hand went up in a hurry, and a small voice piped forth, "In Fatsey Connor's bedroom"—Master Connor being one of the occupants of the old Longfellow house.

CHARLES DICKENS' daughter Mamie, relates that she was often in the room with her father when he was composing his books, and that he acted his characters in the process of creating them, and turning his creations into breathing realities, with whom he wept and with whom he rejoiced.

CHARLES LAMB had the unfortunate habit of stammering, which gave him little trouble unless when excited and earnest. Then it hindered his utterance, and sometimes provoked his quick temper. An amusing story is told of his bathing at Brighton. It was then the fashion to have men stationed in the water to dip the bathers. Lamb submitted to the operation, and began to give instructions as to his wishes. The stammering came on badly. "I am to be di-di-di-dipped," said he. "Oh, yes, we understand," was the prompt reply; and suiting the action to the word they gave him a deep plunge. He came to the surface with red face, and sputtering in an excited tone, "I am to be di-di-di-di-dipped." "Oh, yes, we understand," and under he went again, deeper than before. When he came up he was more excited than before, saying angrily, "I am to be di-di dipped." "Oh, yes!" and under he went the third time. This was too much for him, and striking about lustily, he cried, "Stop, stop! I was telling you I was to be di-di-di-di-dipped *but once*." It was too late to rectify the mistake. A. M. B.

*NOTE.—These anecdotes might be found by teachers to be of great use in various ways, especially as themes for composition.—Ed.

TORONTO:

THURSDAY, NOVEMBER 4, 1886.

AGRICULTURE IN OUR PUBLIC SCHOOLS.

WE print to-day two interesting letters upon the suggestion to introduce agriculture as an optional subject into our public schools. They are valuable as coming from men who view the subject from different standpoints. Mr. Macdonald is a writer upon agricultural topics; Mr. Brown is a practical farmer. Both take a deep interest in the subject; both also take a deep interest in the educational system of Ontario. The publication of their opinions on so important a matter as the advocacy of the introduction of agriculture into schools is, therefore, a cause for congratulation.

Mr. Brown argues that instead of barring the way into the professions, instead of throwing obstacles in the way of entering the Church, Medicine, or Law, inducement should be held out to tempt our young men to undertake agricultural occupations by raising the standard of the rural schools. In this view there lies concealed a profound truth. It is merely another way of saying that farming may be made intellectually as high a profession as the other so-called professions, and that the schools should recognize this fact.

With this we are entirely in accord. Our system of education in this province is too apt to throw a halo over what are termed intellectual pursuits in contradistinction to manual pursuits. It altogether loses sight of the fact that farming may really be made—should indeed be made as intellectual a pursuit as Medicine, the Church, or the Bar. The first portion of Mr. Macdonald's letter admirably gives proof of the intellectual or scientific character which farming has acquired within the last quarter of a century.

This very fact, it seems to us, is one of the most cogent reasons on behalf of the introduction of agricultural subjects into our schools. Until something of the science of the subject is generally taught, farming will remain unscientific. Agricultural colleges of course teach this branch of the subject, but they cannot be said to teach it generally; their teaching, that is, is limited to the few who attend. The great bulk of our farmers probably have never been within the walls of any agricultural college.

But that which we are more particularly anxious to lay stress upon is, not that agriculture, pure and simple, should be taught in our schools—this perhaps is far too much to expect even if it were possible to come to any definite conclusion as to what should be included in agriculture pure and simple; but that our children should early in life be made thoroughly familiar with all those natural phenomena and all those elementary natural laws upon which all agriculture is founded. They need not be taught such things as the relative values of different sorts of artificial manures, for example; but they might be taught the philosophy of manuring generally. They need not be taught the rotation of crops; but they might be taught what changes take place in soils by the growth of crops. In short, as Mr. Macdonald has pointed out, farming in these days is eminently scientific, and since the larger proportion of our growing youths are farmers' sons, they should be taught, not only that farming is a science, but also some of the elementary facts of this science.

Mr. Macdonald argues that since no one cries out against the introduction of what is called "business" into an educational system, so no one should cry out against the introduction of agriculture, since this too is a business. Certainly the advocates of "business colleges" should be the last to stand in the way of any new departure in the direction of making agriculture an optional subject in public schools.

"CIVICS" AGAIN.

WE wish to add one word more on "civics"; namely to reiterate more emphatically the wish that the "Institute of Civics" would abandon their project to introduce this subject into public schools and would devote all their energy and zeal (and they seem to possess these in abundance) to endeavouring to introduce "civics" into universities.

What a medley of opinions there exists at the present time on all questions which may be classed under the title "civics." Henry George and Adam Smith; Hyndman and Fawcett; Carey and Cobden;—or, in other words, free trade and protection; aristocracy and democracy; republicanism and monarchy; socialism and conservatism—all have their advocates. And if we look farther, we shall very often find that the average university man has usually very slender grounds for the side

he advocates. His knowledge of political economy has in all likelihood been very one-sided; his knowledge of law is *nil*; his knowledge of forms of government is antiquated and theoretical; of the aspect of these questions at the present time he has a most vague and misty idea, formed perhaps from the particular magazines he is accustomed to read—or rather to dip into. Solid ground of argument he has little if any. Sophistical trains of reasoning he finds it difficult to combat.

Something, perhaps, of these deficiencies would be eradicated by a more thorough study of what is now called "civics" in our universities.

OUR EXCHANGES.

Kosmos (Victoria College, Cobourg) for September is a most interesting number. Amongst other articles, its table of contents contains, "National Character and Language," by Rev. James Roy, LL.D.; "Avalanche Paths," by Prof. A. P. Coleman, Ph.D.; "The Science of Eating," by Prof. C. C. James, M.A.; "Five Hundred Miles in a Canoe," by Rev. Hugh Pedley, B.A.; "Woman's Work and Woman's Culture," by D. C. McHenry, M.A.; "The Secret of Sugar," and "The Evolution of Heliology," from the *Spectator*.

THE numbers of *The Living Age* for the weeks ending October 16th and 23rd contain "The Scotland of Mary Stuart," *Blackwood*; "Ernest, King of Hanover," *Westminster Review*; "Hero-Worship," *Macmillan*; "Alexander Hamilton," *National Review*; "Early Newspaper Sketches," *Longman's Magazine*; "Musings Without Method," *Blackwood*; "Geography," *Nature*; "On a Hilltop," *Blackwood*; "Some Notes on Fletcher's 'Valentinian,'" *Fortnightly*; "The Terrific Diction," *Macmillan*; "Wild Bees and Bee-Hunting," *Chambers' Journal*; "Liszt's Life and Works," *Fortnightly*; "The Influence of Women," *National Review*; "Monsieur Gabriel," *All the Year Round*; "Poor Dear Theresa," *Temple Bar*; "A Friend of the Family," *Chambers' Journal*; and poetry and miscellany.

THE *Atlantic Monthly* for November contains as usual a very varied mass of reading. Philip Gilbert Hamerton continues his "French and English;" "The Golden Justice," by W. H. Bishop reaches Chapter XIV.; "In the Clouds," ("Charles Egbert Cradlock") Chapter XXVII.; Percival Lowell writes on "A Korean *Coup d'Etat*;" John Fiske on "The Germs of National Sovereignty in the United States." Other interesting articles are "Epic Russia," and "France under Mazarin." This list points to a peculiar fact in regard to the better class of American periodical literature: it always consists of an intermingling of heavy and light reading. Whether it is that such magazines as the *Contemporary*, the *Edinburgh*, the *Fortnightly*, the *Nineteenth Century* and other heavy, English periodicals are so widely read in the States that it would be unwise to fill any American monthly with serious literature only, or whether the class of readers for which publications of the type of the *Atlantic Monthly*

cater differ from the class who read with avidity the best English journal, would be an interesting question.

THE *Popular Science Monthly* for November contains amongst other articles: "North America in the Ice Period," by Prof. J. S. Newberry; "Origin and Results of Sunday Legislation," by Rev. A. H. Lewis, D.D.; "The Mental Faculties of Monkeys," by Mme. Clemence Royer; "Recent Advances in Solar Astronomy," a somewhat technical original essay by Professor C. A. Young; "Geology of the Atlantic Ocean," being Sir William Dawson's address delivered at the opening of the British Association's recent meeting at Birmingham; "Comte and Spencer on Sociology," by Leon Metchnikoff; "The Hickory Nuts of North America" (illustrated), by J. F. James; "The Hygienic Treatment of Consumption," by Dr. Benjamin Ward Richardson, F.R.S.; "Thistles," by Grant Allen; "Inebriate Maniacs," by T. D. Crothers, M.D.; and an interesting article on "Chevreul at a Hundred." Of this great chemist the *Full Mall Gazette* says: "There have been high jinks in Paris in celebration of the completion of the hundredth year of Michel Eugène Chevreul, the eminent chemist. New museums have been inaugurated at the Jardin des Plantes, where M. Chevreul has been employed since 1810: a statue of the hero has been unveiled; commemorative medals presented to him by the National Agricultural Society, of which he has long been President, by the Municipal Council, and by a group of students; deputations from numerous learned societies congratulated him; a great banquet was held at the Hôtel de Ville, followed by a grand festival, procession, bands and illuminations, and the *doyen des étudiants*, as he is called, finished the day by witnessing a special performance in his honour at the Opera, when he occupied the *loge* of the President of the Republic. No man, perhaps, has seen his country pass through so many revolutions and has lived under so many régimes as M. Chevreul. He remembers Louis XVI. His recollections of the Revolution and the Directoire are clear though he was not then at Paris. He can call up pictures of the glory and the dignity of the First Empire. He has lived under the First Restoration, the Hundred Days, the Restoration of 1815, the Legitimist rule of 1830, the Republic of 1848, the Second Empire of 1852, and the Third Republic—in all, eleven régimes.

REVIEWS AND NOTICES OF BOOKS.

Natural Science Note-Book. No. 1. Mineralogy.

By W. S. Sweeny. New York: A. Lovell & Co. 1886.

The purport of this note-book is well put in the preface:—

"The aim in teaching the Natural Sciences to pupils of ungraded schools, and the grammar grades of graded schools, should not be merely to put them in possession of a certain amount of scientific knowledge, but also to cultivate perception, comparison and language. With this in view, this 'Note-Book on Mineralogy' has been prepared. The plan is to secure individual work on the part of the pupil, and for this purpose we have divided each lesson into four parts: (A) To ascertain the physical properties by inspection. (B) To

find the uses by inquiry or observation. In (C) we have given a few facts not easily obtainable; and on the back of each page we require the pupil to write a description in his own language, embracing all facts thus acquired, and such others as his teacher may have given him. With this plan any teacher may hope to get good results, and the pupil will have, as far as it goes, a text-book of the subject, valuable in that it is his own work. The specimens selected for description are the common ones, and are easily procured. Blanks are left for review and for new specimens which the teacher may select. The chemical composition, hardness and gravity are given with each specimen. The symbols are referred to as a short way of writing the name, and no reference is made to their value."

It is well printed on beautiful paper, and should be welcomed by all who are studying the elements of mineralogy.

MR. STOCKTON'S serial, to run in *The Century* for a year from next November, will be called "The Hundredth Man." Matthew Arnold contributes to the October number of the magazine a paper on "Common Schools Abroad."

GEORGE ROUTLEDGE & SONS began in September an illustrated edition of Hugo's "Les Misérables," five large octavo volumes. The translation is that of Sir Lascelles Wrixall, but the expurgated chapters have been restored. Four hundred engravings will be interspersed with the text. The De Vinne Press will manufacture the book.

MR. LEWIS MORRIS, author of "An Epic of Hades," has written a tragedy of the Byzantine period, for representation on the stage. Messrs. Longmans will publish the "Reminiscences and Opinions" of Sir Francis Hastings Doyle, author of the poem, "The Loss of the Birkenhead." Mr. J. A. Symonds's "Ben Jonson" in the series of "English Worthies," will be published immediately. Forthcoming volumes in the same series are "Claverhouse," by Mr. Mowbray Morris; "Sir Thomas More," by Mr. J. Cotter Moison; "Wellington," by Mr. R. L. Stevenson; and "Lord Peterborough," by Mr. Walter Besant.

A "LIFE of Anne Gilchrist," about to be published by Unwin, contains correspondence and reminiscences of Whitman, D. G. Rossetti, Tennyson and other literary celebrities. Darwin's life, by his son, will be published this season by Murray. A biography of Mr. Delane, the old *Times* editor, is announced as soon to appear. Lord Rowton's "Life of Beaconsfield" will not be published till after Mr. Gladstone's death, owing, it is said, to certain references to the Liberal leader. Cassell will publish a volume by James Burnley on the romance of invention. The title of the chastened edition of the "Arabian Nights" is "Lady Burton's Edition of her Husband's 'Arabian Nights,' Translated Literally from the Arabic, and Prepared for Household Reading by Justin Huntly McCarthy."

To a new number of "Proserpina" (Studies of Wayside Flowers) Mr. Kuskin appends this note, dated Brantwood, 10th August, 1886: "Life is really too disgustingly short," he says; "one has only got one's materials together by the time one

can no more use them. But let me say, once for all, in closing this fragment of work old and new, that I beg my friends very earnestly never to mind paragraphs about me in the public papers. My illnesses, so-called, are only brought on by vexation or worry (for which said friends are often themselves in no small degree answerable), and leave me, after a few weeks of wandering thoughts, much the same as I was before, only a little sadder and wiser!—probably, if I am spared till I am seventy, I shall be as sad and wise as I ever wish to be, and will try to keep so to the end."

THE attraction of "Faust" remains unabated at the Lyceum, and, what is not always implied in such a fact, the performance not only maintains, but has even increased, its claim upon the public favour. So far from flagging, the play "goes" with greater spirit after its long run than ever; the incurable defects of its literary construction are less felt; while some of its minor offences to the susceptibilities of the judicious are toned down or have disappeared altogether. . . . On the whole, if the Lyceum play is not—as it certainly is not—the great dramatic poem of Goethe, Mr. Irving is fairly entitled to the credit of having set many an English reader to seek out the beauties of that work for himself. It is computed, we believe, that upwards of one hundred thousand translations of "Faust" have been sold by various booksellers since this piece began its run; and Mr. Irving may boast to have done more to popularize that work of genius in this country than all the innumerable books, essays and articles that have ever been devoted to it.—*The Saturday Review*.

LET the public library be considered by its librarians as a hospital for crippled minds, quite as much as an aid to those persons who already understand and appreciate it. There need not be fewer catalogue cards with their sparse and grudging notes; but near the catalogues, and among the readers, there ought to be active and helpful librarians whose sole duty should be to furnish oral notes and advice *in extenso*. Two of the main uses of the policeman are, to direct the stranger, and help the feeble. The great retail stores have their floor-walkers, who point you to the elevator or lace-counter with insistent unction. Railroad corporations have discovered that index sign-board; and intricate time-tables are riddles to many persons even of more than ordinary intelligence, and have therefore supplemented those devices in large depots with an oral information man who succeeds in adjusting the passenger service of the road to the particular wants of individuals, and not merely to the presumptive wants of that abstraction, the "patron." But where, in our American public libraries, is there a like officer, whose chief duties are to set right a perverted reader; to direct the lost reader through the crowd of 100,000 books to the friend he is seeking; to tell all the connections to be made, and all the delays to be endured on the "Royal Road to Learning"?—*E. H. Wooltruff, in a Recent Address*.

BOOKS RECEIVED.

Report of the Superintendent of Education for the Protestant Schools of Manitoba for the year ending 31st January, 1886. Presented by the Hon. D. H. Wilson, M.P.P.

Educational Opinion.

UNIVERSITY CONFEDERATION.

THE following paragraphs contain the views of Victoria College, as expressed in its official organ, *Kosmos*, upon the subject of confederation:—

In the discussion of this question we have felt the force of the strongest arguments on either side. The ideal scheme has many grand features. As we are about to realize it there are many dangers. There will be intense competition between the lecture rooms of University College and those of Victoria. Nothing can hold the students to any college except first-class work. Dead wood and mediocrity will be weeded out, but will the competition be healthy? Is not the bane of our public school system the perpetual "grind" in view of examinations? In the lofty region of the University professoriate, thank heaven, this may be escaped. And it will rest upon the members of the professoriate to save our now university from the stigma of machine education, and to demand the highest style of work from those who attend their lectures and work in their laboratories. This, however, may be rendered impossible by the pressure of numbers and the slavery of excessive university machinery, crushing the individuality and checking the enthusiasm of professors.

We are inclined to think that Victoria, as an arts college, is doomed; that questions of economy and utility will, even if Dr. Potts' work be crowned with remarkable success, gradually force the college authorities to take the position of a theological school unless unforeseen events supply stimuli sufficient to awake all Victoria's energies and prevent such a consummation. A very few years will decide, and if the hopes of the zealous defenders of the scheme be not realized we shall see Albert College take the place of Victoria, and Belleville succeed to the blessings of Cobourg. Queen's will have its rival in the East, and Methodism, doubly equipped, with splendid theological school in Toronto and an independent university at Belleville, will have a double hold upon the educational work of the country. We are quite willing that the experiment should be tried, costly though it must be.

Victoria's only hope now is strength, and her strength can only grow out of the loyalty and hearty support of her *alumni* and Methodism. To go into confederation a weakling means disaster. With her mathematics, science and metaphysics gone, to be anything less than peerless in what is left to her means the quenching of her very life, and she will bring no more into confederation than a name and a crowd of students over whom she will have very little control ex-

cepting those pursuing theological studies. If she has a fine residence she may have the privilege of putting some of the Methodist students taking the arts course to bed, and of filling their stomachs every morning with oatmeal porridge, mixed, perhaps, with a little theology during the terms of four years. But what is the privilege worth? Strong reasons must be given to students to give themselves to Victoria instead of enrolling themselves at University College. Only first-class equipment and professorial success and enthusiasm can give these reasons. The lengthened agitation has resulted in this decision. Now we plead for a fair trial. After confederation the chances of a Methodist student will be as good as they can be now either at Cobourg or Toronto. Toronto is ours, Victoria is ours. Let us make our college such a one that we shall be proud of her, because of the influence she may exert upon our common university.

Many are the dangers which will beset student life in the city. No longer will the quiet charm of a truly academic town be ours. The restless atmosphere of a business city will brighten or blast the intellectual prospects and work of many a student. The same social influences cannot grow up upon a different kind of soil. And while to some students of Victoria the change may be hurtful, to one class it must yield great advantages, and that is, the theological men. In these days, when the rush of population is toward our cities, when there a heathen population is growing up under the shadows of our churches, and there the great social problems of the day are illustrated, it is a misfortune for a great Church to educate her ministry away from the great centres of population, and send them out from her college halls with no practical idea of the Gospel work to be done in cities before our civilization is safe. If the opportunities which Toronto affords are made proper use of by the authorities of Victoria the theological students will not be scattered among the down-town churches as pulpit supplies or workers in the Sunday-schools, but will be deployed off into the rougher portions of the city to do genuine Jerry McCauley work and be saved themselves from kid-glove Christianity. No other training can so well fit them to take charge of city pulpits and to engage in missionary work at home or abroad, or to feel sympathy therewith. Further, the contact with men holding to different creeds must exert a broadening influence upon them, and tend to produce a true Christian liberalism among the young thinkers of Canada.

For the sake of Canada and the Methodist Church we hope that some day the splendid possibilities of this scheme may be realized, and the fears of many be supplanted by the sight of better things.

Mathematics.

ANSWERS TO THE PROBLEMS IN ARITHMETIC FOR CANDIDATES PREPARING FOR THE ENTRANCE EXAMINATIONS.

(See issue of Oct. 14, No. 91, page 618.)

1. A, \$900; B, \$800; C, \$768.
2. In the first part of the question read 1725 feet instead of 1275. Cost is the sum of \$12 50 $\frac{1}{2}$, \$84 28 $\frac{1}{4}$, \$56 53 $\frac{3}{8}$, \$56.79 $\frac{1}{8}$, \$45.95 $\frac{1}{8}$, \$17.40.
3. \$144.
4. 281 $\frac{3}{8}$ hops.
5. \$5.368.42 $\frac{1}{8}$.
6. 1 $\frac{1}{4}$.
7. $\frac{1}{2}$ of a day.
8. The fourth number is 210.

PROBLEMS IN ARITHMETIC

SUITABLE FOR CANDIDATES PREPARING FOR THE ENTRANCE EXAMINATIONS.

(Continued from our last issue.)

42. REDUCE 100,196,196 square inches to acres, etc.
43. In 1,749,134 seconds how many weeks, days, etc?
44. Reduce 1,186,126 inches to miles, etc.
45. Reduce $\frac{3}{8}$ of a pound Troy to the fraction of a pound Avoirdupois.
46. Find the value of 0.009943 of a mile.
47. Divide 101 by 1.01, and 0.101 by 10.1.
48. Reduce 14 hours 15 minutes to the fraction of $3\frac{1}{2}$ days.
49. Divide 0.05625 by 0.0275.
50. Divide 0.5 by 25; 87.5 by 2.5, and 0.055-757592 by 0.009207.
51. Resolve 18, 16, 36, 44, 45, 48, 63, 121 into their simplest factors, and find their least common multiple.
52. A dishonest milkman mixes a pint of water with every two quarts of milk. How many gallons will he make in this way out of 20 gallons of pure milk.
53. A well is 18 yards 2 inches deep, and the wheel is 4 ft. 2 inches round. How many turns of the wheel will raise the bucket?
54. Find the value of 0.2625 of a mile.
55. Add 0.60457; 46.70056; 5.80007; and 4.7896.
56. Reduce 2.025 miles to yards.
57. If a bankrupt has assets to the amount of \$1,020 and debts to the amount of \$3,225, how many cents on the dollar will his creditors receive?
58. A person sold $\frac{3}{8}$ of his estate, bequeaths $\frac{3}{8}$ of the remainder to his son, and leaves the rest to be distributed equally among three charities. If each of these charities receives \$136.25 what is the value of the estate?
59. What is the circumference of a wheel which makes 514 revolutions in passing over 1 mile, 467 yards, 1 foot?

60. A piece of cloth when measured with a yard measure that is $\frac{3}{8}$ of an inch short appears to be $10\frac{1}{2}$ yards long. What is its true length?

61. Reduce 42 rods, 1 yards, 8 inches to the fraction of a mile.

62. Divide the product of 6.225 and 8.25 by 0.0025.

63. Find the sum of 17.01, 0.1303, 500.42101, 0.001 and 6.6.

64. Divide 6.2301533682 by 8.8964.

65. What number added to $1\frac{1}{3} + 3\frac{1}{6} + 2\frac{1}{6} + \frac{1}{3}$ will make the sum total 10?

66. Give in feet the value of 7.0125 miles.

67. Find the average of 213, 732, 0, 3220, 82, 1720, 51, 912.

68. A and B can do a piece of work in 7 days, B and C can do the work in 8 days, and all three together can do it in 5 days. What part of the whole work can each do in one day?

69. Divide 78 by 361.059 to three places of decimals.

70. Find the value of $2.5 + \frac{1.5}{0.02} - 6.002$.

71. Find the average of $12\frac{1}{2}$, 21, $7\frac{1}{2}$, 0.034, 3.125, 0, 24.5, and $12\frac{2}{3}$. Express the fractional part decimally.

72. Reduce to the simplest form $\frac{435.1 \times 0.0036}{0.125}$

73. A brick 9 inches long, $4\frac{1}{2}$ inches broad, and 3 inches thick weighs 9 pounds nearly. What would a brick weigh if it were 12 inches long, 6 inches broad, and $4\frac{1}{2}$ inches thick?

74. A man buys eggs at 11 cents per dozen, and sells them at 2 cents a piece. What does he gain per cent?

75. What sum, put out at $3\frac{1}{2}$ per cent for 6 years, will produce \$28.872, simple interest?

76. Divide $1 - (\frac{1}{2} + \frac{1}{3} + \frac{1}{4})$ by $1 - \frac{1}{2}$ of $\frac{1}{2}$ of $\frac{1}{4}$.

77. At what price per hundredweight must goods be sold, which were bought at \$5 per ton, in order to gain 6 per cent?

78. A can walk 10 miles in $2\frac{1}{4}$ hours, and B can walk 11 miles in $2\frac{1}{2}$ hours. They start to walk a match of 55 miles. Which will win and by how much time?

79. If a room is 27 ft. 5 inches long, 14 ft. 7 inches wide, 12 feet 10 inches high, how much paper $\frac{3}{8}$ of a yard wide is required to cover the walls?

80. If I buy sugar at \$7 per cwt., at what rate per lb. must I retail it to gain 72 per cent?

81. Simplify $\frac{12.4 \div 0.064 - 0.066}{0.002}$

82. Find the cost of papering a room 21 feet long, $16\frac{1}{2}$ feet wide, $10\frac{1}{4}$ feet high, at fifteen cents per square yard.

83. A can run 10 yards to B's 9. How many yards start must A give B in a mile to make an even race?

84. If \$850 amounts to \$913.75 at $2\frac{1}{2}$ per cent. find the time.

85. A room is 10 ft. high, $5\frac{1}{2}$ yards long, and 3 yards wide. It contains a door 8 ft. by 4 ft., two windows each 5 ft. by 4 ft., and a fireplace 6 ft. by 4 ft. 6 inches. How many square yards on its walls require to be painted?

HURON.

(To be continued.)

Table Talk.

COLOGNE is to have the entire "Ring des Nibelungen" next winter, preceded by Halevy's posthumous opera, "Noah," revised and completed by his son-in-law, Bizet.

IN a sentence in the last number of *Kosmos* we find the word "dove" (as the preterite of dive). We hope, for the honour of *Kosmos*, that the sentence in question was merely a reprint or else a *lapsus calami*.

A NEW musical work by Gounod, not an opera, will be produced at the Paris Opera in 1889. It is entitled "Maitre Pierre," and its libretto based upon "Heloise and Abelard." It will offer but four or five solo parts, be divided into four parts and contain massive choruses.

THE Holloway College is a magnificent institution, but the idea is fantastical. Fancy 250 girls, all under exclusively feminine training and teaching, each with a separate bedroom and sitting-room, besides a conversation room for every six, and a refectory, library, lecture rooms, and picture gallery! No male is to be allowed on the premises. The service in the chapel is to be Christian, but not associated with any Church or sect. There is an altar under a canopy of carved oak, an organ, and stilled seats. The site is noble—high, airy, spacious—with extensive shrubberies and terrace gardens.

A FEW weeks ago Mr. Ruskin received a circular letter asking for a subscription towards paying off the debt owed by a chapel in London; to which he returned the following characteristic reply:—"I am scornfully amused at your appeal to me of all people in the world the precisely least likely to give you a farthing! My first word to all men and boys who care to hear me is, 'Don't get into debt. Starve and go to heaven—but don't borrow. Try first begging—I don't mind if its really needful—stealing! But don't buy things you can't pay for!!' And of all manner of debtors pious people building churches they can't pay for are the most detestable nonsense to me. Can't you preach and pray behind the hedges—or in a sandpit—or a coalhole—first? And of all manner of churches thus idiotically built, iron churches are the damnablest to me. And of all the sects of believers in any ruling spirit—Hindoos, Turks, Feather Idolaters, and Mumbo Jumbo, Log and Fire Worshipers—who want churches, your modern English Evangelical sect is the most absurd, and entirely objectionable and unendurable to me. All which they might very easily have found out from my books—any other sort of sect would!—before bothering me to write it to them. Ever, nevertheless, and in all this saying, your faithful servant, JOHN RUSKIN."

THE trial of voices for the chorus of the American Opera Company recently took place at the Academy of Music. The first day was set apart for sopranos and contraltos. Of the eighty applicants, some sixty presented themselves. Gustave Hinrichs, the assistant director, and Arthur Mees, the former chorus-master of the Cincinnati Festival, examined the applicants. Theodore Thomas, Prof. Tomlins, Carl Ketter, Henry Fink and William Wheeler were present during the

morning. Each applicant sang something of her own selection. It was a curious fact that but few chose songs suited to their voices. Ahl's "Embarrassment" was the most popular, although Harrison Millard's compositions were selected by many. Most of the young ladies were nervous, and a greater number of them had never sung in public before. One young lady from Coney Island sang "The Flowers that bloom in Spring—trala," and another rather elderly female of some two hundred pounds *avoirdupois* pleaded to her "Birdie" to "Come and fly with her." "There are several curious features of these examinations," said Mr. Hinrichs. "Most of the applicants want to run before they know how to walk. They hardly know the rudiments of singing, and yet they boldly assay difficult Italian airs which require months of study to master. The American voice is more of the contralto than of the pure high soprano type. Tenors and sopranos are becoming rarer every day. We have had some good voices here this morning, but the majority; well—" The second day was devoted to the future Campaninis and Galassis.—*The World*.

WHERE did the teachers of the middle ages teach? In the cloister schools, the cathedral schools, and the parochial schools. These parochial or common schools never amounted to much, because the masses of the people had little interest in knowledge. Still, at a comparatively early time the popes established the parochial schools by the side of the parish church. Charlemagne ordered that the children should be instructed in reading, singing, reckoning, some grammar and writing; and a council held at Mainz, before the middle of the ninth century, required that the children should be sent either to the cloister schools or to those of the parish, that they might learn the Creed and the Lord's Prayer in their own language. The cloister schools are classed as those of the Benedictines, Dominicans and Franciscans. The first Benedictine Monastery was founded at Monte Casino, in the Kingdom of Naples, about 529 by St. Benedict himself. This order increased so wonderfully and became so powerful that it may be said to have been the chief means for the spread of learning throughout the West from the sixth to the twelfth century. At first the regulations of St. Benedict were for those only who had set themselves apart to the service of the Church. But with the increase of the reputation of the order it became necessary to provide instruction for those scholars who were not devoting themselves to the monkish life. In keeping with this demand, the cloister schools were established; there were also so-called nunneries of this order, the first at Blicholsheim, in France, being widely celebrated. These cloister schools for girls did the work of elementary schools, and concerned themselves especially with household duties. The supreme importance of this Benedictine order ceased in the twelfth century. Then the Dominicans and Franciscans took up the work, and though they did not accomplish so much as the other orders, their results were marked in providing better school-books. They taught mostly the Lord's Prayer, church melodies, and Latin.—*From "Some Outlines from the History of Education," by Professor W. R. Benedict, in Popular Science Monthly for October.*

Educational Intelligence.

SOUTH ESSEX TEACHERS' CONVENTION.

THE South Essex teachers met in convention at Essex Centre on Thursday and Friday, the 14th and 15th of October.

Inspector Maxwell discussed the study and teaching of history under the heads: (1) Purposes for which it is studied. (2) Causes of failure in teaching it. (3) Class methods, stating what the purposes are. (1) Cultivation of the faculties, imagination, judgment, observation, &c. (2) Strengthening character. (3) Imparting of information. The causes of failure in teaching it are: (1) Beginning the formal study at too early an age. The usual course pursued requires a maturity of mind that young people do not possess. (2) Placing too much reliance on the text-book. (3) Giving too long lessons. (4) Reviews are not sufficiently frequent. (5) Questions usually demand facts and not an exercise of thought. (6) Black-board is not used enough. (7) Pupils do not write out the work with sufficient frequency. (8) Pupils are not practised in following a topic or making a summary of events. In assigning a lesson he would, (1) Read on the lesson with the class, commenting on the facts and explaining the language that pupils might understand it. (2) Referring to parts of text-books where causes of events were stated or results of causes mentioned in lesson. (3) Give some questions to be answered in writing. (4) Use map if necessary to trace journeys, campaigns, &c. (5) Give topics to be discussed. In the recitation he would, (1) At the first give questions requiring simple facts for answers. (2) Enliven recitation by rehearsal of some anecdote or recital of some poetry bearing on the lesson. (3) Describe some event and ask class to name it. (4) Give one or more facts as a cause, and ask class to give one or more facts as a result. (5) Let one pupil describe some historical person, place or event, and others give the name. (6) Encourage pupils to make comparisons between leading characters, to contrast conditions of people at different times. (7) Cultivate national spirit and enterprise.

Mr. Weir thought that the study of history developed the qualities of good citizenship and a national spirit. The teacher should prepare every lesson. In the early stages of the work have regard to development of observation and imagination. In assigning a lesson suggest how to prepare it. Much of the work should be written. In teaching there must be variety. Assign selections for reading from such authors as Scott, &c., for illustration of certain topics. Dwell on the great tendencies in each period.

Mr. Luckham then introduced and discussed drawing—perspective and geometrical.

Mr. Wightman discussed "How to secure Correct Use of Language in Schools." His work was really a development lesson in language.

Considerable discussion followed the presentation of this subject, in which the usual reading matter, as cheap novels, &c., was severely condemned. It was suggested that the teachers should read extracts from the best authors and endeavour to excite in the pupils a desire for better acquaint-

ance with these authors. Inquire of pupils who they had been reading; direct them to sources of information on something in which they are interested, for pupils will more readily read for information than for fun, if the page is readable.

Mr. Pearse discussed "The Teacher Outside the School-Room," under three heads. (1) To what extent he should employ his time in preparation for school work. (2) How to live so as to preserve his health and to gain vigour for his work. (3) How to conduct himself.

Mr. Weir gave some admirable thoughts on culture.

Miss Bald discussed English literature.

A circular from the Ontario Teachers' Association concerning the formation of a College of Preceptors, and also one from The Ontario Educational Society or Teachers' Union were referred to a committee, which reported in favour of adopting the general principle of the address of Mr. Dickson, concerning the College of Preceptors, and of laying the circular concerning the Teachers' Union on the table. The report was adopted.—*Condensed from the Amherstburg Echo.*

MANUAL TRAINING.

THE Montreal *Witness* has lately been strenuously advocating the inauguration of manual training into high schools. An interview with Dr. Kelley, of the high school, Montreal, evoked that gentleman's opinion on the subject. These we give:—

Dr. Kelley stated that the high school had been organized in connexion with the arts department of McGill. Subsequently an endowment for science and engineering had been added. Ample provision had been made for the training of those who intended to pursue the professions, as well as for those who meant to follow surveying and engineering. By far the largest number of pupils, however, were those whose future lives would be devoted to mercantile pursuits. In their behalf greater attention was paid to arithmetic and book-keeping. Of these pupils, about fifty had applied for evening lessons in shorthand.

There was no provision in the school for manual training. Dr. Kelley said, but last session the system of drawing in the schools was entirely remodelled, and a class for teachers had been organized by the board, which met once a week. The pupils, then, in the matter of drawing, which was the basis of all industrial training, were taught flat drawing, drawing from models, perspective and mechanical drawing.

With regard to the girls, the tendency was now towards more artistic work. All the girls in the schools were taught to sew, but in this direction a great deal more might be done. A girl should be so trained that upon leaving school she should be able to cut and make her own dresses, and generally do refined housekeeping. There were a large number of girls belonging to the poorer classes in the common schools, and it was very necessary that they should learn, not merely to sew, but to lay a table, say, in their own homes. Among the boys, Dr. Kelley said that individual drawing had commenced, and showed the reporter a large class of boys earnestly engaged in object drawing, and drawing from patterns of machines after the Worcester plan.

With regard to manual training, Dr. Kelley was decidedly in favour of it, as carried out in St. Louis and Chicago. He saw no reason why the system should not be introduced into their schools on the same plan, though not upon the same scale. A shop could be erected on the grounds of the high school, for example, or the basement could be used, where elementary instruction in carpentry, wood-turning, iron clipping and filing, pattern making, forge work, bronzing and soldering could be carried out. This instruction could be given in the afternoon, while the usual studies could be pursued in the forenoon. Many of their boys have shown great skill with the lathe and fret-saws, and have often printed the tickets of admission to the grounds upon their hand-presses. He did not propose to teach trades, but rather a knowledge of, and familiarity with, tools, after the manner of the St. Louis and Chicago institutions. The cost of building, tools and teachers would be comparatively small.

But in order to carry out the idea in its comprehensive aspect, the city needed a polytechnic institution, equipped with competent teachers and every facility for the industrial harmony of both sexes. This would require an endowment of \$300,000 or \$400,000. It meant nothing less than this. Meantime he would like to see an effort attempted such as he had suggested.

THE St. Mary's Mechanics' Institute will probably abandon their intention of having art classes, owing to the reduction in the government grant.

MISS JESSIE R. OLING has been appointed to fill the vacancy as teacher in a Picton public school, caused by the resignation of Miss Dawson.

THE corner stone of the new college hall, Woodstock College, was laid on the 22nd October, at half-past two, by Mrs. Wm. McMaster, Toronto.

HERBERT SPENCER is at Brighton for the winter. He is in a bad state of health, and has assumed a completely recumbent attitude in his wheel-chair.

MR. REGINALD E. GAUL, who recently resigned his position as principal of Queen Square School, Charlottetown, P.E.I., has been appointed principal of St. Mary's Public School, Halifax. He entered upon his duties on November 1st.

MR. E. HIGLEY, who has been headmaster of West Lorne Public School for two years, has resigned the position with the view of entering Huton College, London, to study for the ministry. His successor at West Lorne is Mr. J. McKillop, M.A.

AT a special meeting of the Goderich School Board held on Wednesday evening, Oct. 13th, it was moved by Mr. Ball, seconded by Mr. Nicholson, that all the teachers in the central school be re-engaged at present salaries. Moved in amendment by Mr. Butler, seconded by Mr. Craik, that the board advertise for teachers for all the departments of the public schools. The amendment was lost and the original motion carried, only one trustee dissenting.

THE Woodstock High School deputation were unable to meet the Minister of Education with Mr. Mowat on Monday the 15th October, but on

Tuesday Messrs. Sutherland and Pattullo saw him and having explained fully the present status of the high school, as to its staff, equipment, and general efficiency, the Minister at once promised that if the staff was found to be complete, as required by the Act, when the inspector next visited the school, and if the board pledged itself to meet the requirements as to a gymnasium and fence, the school would be raised to the rank of a collegiate institute, and to rank as such from the September opening.

WHILE the boys in the Gore School, London township, were playing, on the 22nd October, young Eitelbert Stricknell, aged nine years, ran after Herbert Smith, aged thirteen. Smith had a knife in his hand, and it is alleged struck back at Stricknell to keep him off. Stricknell received a blow in the arm from the knife, which cut right through close to one of the large arteries, the point of the knife coming out on the other side. Mr. E. B. Stricknell, father of the boy, caused a warrant to be issued for young Smith, and the case came before Squire Peters. The defence was that it was an accident, and the Magistrate took that view of the case and dismissed the charge.

THE bursar of University College has received from a liberal donor, who withholds his name, the handsome gift of \$2,000 to found a scholarship, the interest of which is to be annually awarded for the special encouragement of the study of the Natural Sciences, and as such to be given to a student in actual attendance at the college who shall manifest the greatest ability in the diligent pursuit of that department of knowledge. The donor further adds: "It is also my wish that this scholarship shall bear the name of the 'Daniel Wilson' scholarship, and so be associated with the name of one whose example will furnish an honorable incentive to the young men of Canada to follow his steps." It is to be hoped that this example of liberality will also prove an incentive to other wealthy citizens to follow the steps of this generous patron of higher education.

MR. H. GENOCHIO writes to the *Globe* (London, Eng.) giving the result of an interesting experiment at Battersea Park-road Board School, under Mr. J. Kaali, the master of the evening classes: "We had the material in a class of over 200 youths, who had just left school and were entering into the struggle for life. So we put the suggestion to them, and they accepted it at once. We charged 1d. for membership, 1d. per month's subscriptions, and 3d. for a 6d. bath ticket. We started with nine swimmers out of ninety members. We have met twenty-six times, with an average attendance of fifty. We have closed the session with fifty-five swimmers, each of whom will have a certificate issued to him, signed by a member of the School Board and the swimming master. As an encouragement we have collected over £20 worth of prizes, which were competed for last Wednesday night. Now, sir, that we in Battersea have proved that such a movement can be made a success, will any one, I ask, in other parts of the metropolis take up this humane work of encouraging the art of natation among the London school-boys?" Mr. Genochio's experiment is not by any means the first, even in recent years. Many of our readers could show equally successful efforts, but comparison of details is always beneficial, and we trust others will enter upon the same path when they see how easily it can be done.

Correspondence.

AGRICULTURE IN OUR PUBLIC SCHOOLS.

To the Editor of the EDUCATIONAL WEEKLY.

SIR,—It pleases me to see that you have received an awakening on agricultural education. The writer in the *Week* whom you quote, is right in saying that agriculture is the important industry of the Dominion; he should have added that it is rapidly becoming more and more so.

The impression is too prevalent that farming is merely a mechanical operation; in truth, its intellectual branches are just as profound as those of any other profession. But there have been illustrious men in arts, medicine and law. Where are our agricultural celebrities? This is what dampens the ardour of our ambitious youths.

It is not well enough known that intellectual agriculture is only half a century old, and it is too well known that medicine dates at least as far back as Æsculapius, and so on with the other professions. The past quarter of a century has produced more men of mark in agriculture than all the other professions combined. Almost any schoolboy can give you a dissertation on Luther and Harvey, but what does he know about Liebig, Laves, or Vrelcker? His education forces him "to live and move" in the past. If his highest ambition is to become a Moses or a Powderly, he need not now step out of the field of agriculture. Farming being also a business, as well as a science and an art, there lies here, too, a broad field for business talent; and I should add that as a manufacturer the farmer also takes the lead. His is the business of gathering the raw material, and manufacturing it into finished articles for consumption. It is easier to learn how to exercise the greatest economy in turning a fleece into a coat than a dang hill into a fleece. The only real difference which I can see between the agricultural profession and the others is that there is money in the calisthenics and gymnastics of the former, as well as in its intellectual pursuits.

But agriculture will never have tone until these truths are rigidly enforced.

Commercial business is extensively taught: why should there be such a howl against the introduction of agricultural business?

The question, in its extreme simplicity, stands thus: The teacher may explain to his class that 2 yds. cloth and 3 lbs. sugar cannot be added together—this is mathematics; but he must not say that 2 bush. wheat and 3 lbs. nitrate of soda cannot be summed up—this is agriculture. The pupil may calculate the interest on a business note, but he must not meddle with the interest on a farm mortgage. Tell the pupil by all means that he constantly breathes free oxygen—this is hygiene; but for heaven's sake keep it a profound secret that the same element, in certain forms of combination, is found in every morsel he eats, and that the plants get their oxygen from the soil—this is agriculture. Tell him that Canada is in North America: this is geography; but he must never know how it got there, or what it came from—this is agriculture. Give him nitre and sulphuric acid in a retort, and show him how to make aqua fortis—this is chemistry; but don't tell him that

Nature's laboratory, the soil, manufactures this article for plant food, and that it forms the basis of farming—this is agriculture. If the professions are not to be taught in our public schools, tell me, Mr. Editor, where you intend to send the school teacher to acquire the rudiments of his profession. Because a large majority of our citizens are farmers, do you maintain that this fact makes a wrong principle right.

Many practical farmers insist that they don't want agriculture to be taught in schools, that their children get enough of it on the farm, and that they don't want to make "book-farmers" of their boys. Every attempt made to legislate prejudice out of the popular mind has proved a failure. The placing of Tanner's "First Principles of Agriculture" on the optional list of studies was a great blunder. Indeed, any work written for British farmers cannot possibly be suitable for our public schools, and it will have the drawback of poisoning our farmers' minds against agricultural studies. Besides, a book written in a style avowedly to avoid the technicalities of the subject cannot enter into the "first principles of agriculture." To comprehend the technical terms is to know the first principles, and this is the scope of public school education. After-reading will accomplish the rest; to destroy the utility of the press is to undermine its freedom.

I can clearly see what should be done, but how to do it under existing circumstances is another question.

W. A. MACDONALD.

London, Ont.

To the Editor of the EDUCATIONAL WEEKLY.

SIR,—As you have kindly solicited an expression of opinion in regard to the overcrowding of professions, I will venture one or two suggestions relating to farmers' sons, from a farmer's standpoint, supposing human nature is much the same in the country as in the town, and that ambition, and the desire to improve one's condition, is equally indulged in.

While it is lamentable that so many of our best youths are induced to abandon agricultural pursuits, I cannot see a remedy in constantly raising the standard, and rendering more difficult the acquisition of the professions. As farmers' sons are comparatively as resolute in grappling with difficulties as others, and although their energies are often taxed, so that there is little left for the prosecution of it when acquired, still the competition goes on. So, instead of trying to keep everything out of reach of our ambitious youth, and producing complete restlessness, let us raise the standard of the farming community. Instead of being obliged to send our boys and girls, just entering their teens, to city or town to advance their education, and be allured by the apparent ease and refinement of city life, let us have efficient schools in the country, where our children shall have less difficulty in sharing the advantages of higher education, intellectual culture, and social refinement, and more time from farm drudgery at their disposal, to accomplish which farmers must not help to maintain so many monopolies, political dignitaries and professional men, and still endure an unlimited competition in their toilsome productions.

S. K. BROWN.

Pickering.

Examination Papers.

EDUCATION DEPARTMENT,
ONTARIO.

July Examinations, 1886.

HIGH SCHOOL ENTRANCE.

READING.

Examiner—JOHN SEATH, B.A.

IN the examination in reading, the local examiners shall use one or more of the following passages, paying special attention to pronunciation, emphasis, inflection and pause. They shall also satisfy themselves by an examination on the meaning of the reading selection, that the candidate reads *intelligently* as well as intelligibly. Twenty lines, at least, should be read by each candidate. A maximum of 50 marks may be allowed for this subject.

- | | |
|-----------------------------------|-------------|
| I. Before Seidan | pp. 199-200 |
| II. A Christmas Carol | " 207-208 |
| III. Canada and the United States | " 289-291 |

WRITING.

Examiner—J. E. HODGSON, M.A.

1. Write the following letters and figures—*D, E, F, G, J, K, M, N, Y, sch, qu, uns, lgh, 3, 5, S, o*.

2. Write the following passage :

The savage men gathered round the cage that moment, and amidst a dead silence the bird uttered some very uncertain chirps: but after a while he seemed to revive his memories and poured forth his soul in song.

COMPOSITION.

Examiner—J. E. HODGSON, M.A.

NOTE.—A maximum of 5 marks may be allowed for neatness.

1. Change the following from the direct to the indirect form of narration :

"Since our mother died we have not had a single happy hour. Stepmother beats us every day; and if we come near her she sends us off with a kick. We have to eat the stale crusts that remain from meals. Even the little dog under the table is better off than we are. May heaven have pity on us!"

2. Combine the following elements so as to form complex sentences :

(a) In the reign of Queen Elizabeth a certain plant was brought to England for the first time.

The plant was brought to England by Sir W. Raleigh.

The plant is now very much used.

The plant is called tobacco.

Sir W. Raleigh had sailed to America in search of plants.

(b) An army in India was marching up a hill.

The large guns were drawn by elephants.

The large guns were very heavy.

On the carriage of one of the guns a soldier was sitting.

The soldier was very tired.

3. Substitute equivalents for the italicized portions of the following :

(a) *By sundown we reached the neighbourhood of English Town, and began to enquire for lodgings.*

Many a time the people of Cape Breton boasted to me of their *hospitality*.

(b) We *reached* at last the *summit* of Cape Smoky, the *barrier* that for two days had *fenced us off* from the northward.

(c) *All at once* the light of a *ruddy* sunset filled the Gulf with great *splendour*; and we stood on a *pinnacle* in the midst of it.

4. Give in your own words the substance of the following :

Once on a time, as *Aesop* tells,
A man in winter's iron weather,
Found on the bare and wind-swept fells
A snake, its coils all bound together.

He raised the creature from the ground
And was about to fling it by,
When, lo! some spark of life he found
Still glowing in its evil eye.

5. As an exercise in composition, write the substance of one of the prose literature selections prescribed for this examination.

GRAMMAR.

Examiner—JOHN SEATH, B.A.

NOTE.—A maximum of 5 marks may be allowed for neatness.

1. Make lists of (1) the names, (2) the asserting words, (3) the modifying words, and (4) the connecting words in the following sentence; and, if there are any words in it that you do not place in one or more of these four lists, state what they do in the sentence:

James, my eldest *brother*, who wished much to *speak* to me, says, that, *alas!* he has to go, *but* that he will return to-morrow.

2. What is meant by Syntax? Explain, where possible, the syntax of the italicized words in the sentence in the foregoing question.

3. Construct sentences to show that each of the following may be used with the value of different parts of speech, and name in each case the part of speech: Well, when, seeing him go, who was there.

4. Explain, in your own words the meaning of "gender," "inflection" and "object"; and illustrate by reference to each example of these terms in: James, these are two of the fish that your brother caught with his rods.

5. Name the different classes of pronouns: and explain, in your own words, the meanings of the names you give them, illustrating your answer by reference to the following: Them, thou, I, who, each, himself, some, this.

6. Write out the first and the second person singular of all the indicative tenses of the following verbs, that express actions wholly past: Lead, seek, give, receive.

7. Correct, where necessary, the following, giving the reason in each case:

(a) Wanted, a young man to take charge of a pair of carriage horses, of a religious turn of mind.

(b) The brightness of her arms and apparel were conspicuous in the foremost ranks.

(c) I do not think any one to blame for taking due care of their health.

(d) During the last century no prime minister has become rich in office.

(e) It is not fit for such as me and you to sit in the same place with the rulers of the land.

(f) A squirrel can climb a tree quicker than a boy.

8. (a) From the golden dream of a new age, wrought peaceably and purely by the slow progress of intelligence, the growth of letters, the development of human virtue, the Reformer of Wittenberg turned away with horror.

(b) *Who* dreamed that saw his *maiden* grasp
On his paltry's brodered reins,
That the blood of the old Plantagenets
Was running in his veins?

(1) State the kind of each of the clauses in the above sentences.

(2) Write out on separate lines the different parts of the subject and the predicate of (a) describing the use of each of the parts.

(3) Explain the meaning of the term "parse," and parse the italicized words in (a) and (b).

ORTHOGRAPHY AND ORTHOEPY.

Examiner—JOHN SEATH, B.A.

NOTE.—Twenty-five of the fifty minutes allowed for this subject are to be allotted to A, which is to be read to the candidates three times—the first time to enable them to collect the sense; the second time to enable them to write down the words; and the third for review. At the end of the twenty-five minutes, the Presiding Examiner will distribute B among the candidates, who will after writing their answers, fold them and hand them in with their work under A. Two marks are to be deducted for each mistake in spelling, and one for each mistake in pronunciation.

A.

Political economy does not pretend to examine all the causes of happiness; and those moral riches which can be bought and sold are no part of wealth in our present use of the word. The poor man who has a good conscience, affectionate friends, and sound health, may really be much happier than the rich man who is deprived of such blessings. On the other hand, a man need not lose his good conscience, and his other sources of happiness, when he becomes rich and enjoys all the interesting occupations and amusements which wealth can afford.

Apparition, mediaval, temporarily, doughty, transferable, bivouacked, obliquely, placidly, aerial, complacently, rhetorician, abysses, beleaguers, nucleus, pinnacle.

B.

Indicate fully the pronunciation of the following words: Tremendous, ravine, Solferino, hovering, Notre Dame, heroine, violent, masculine, cowardice, Munich, Ardennes, alien, bayonets, sanguine, extraordinary.

Accent the following: Harassed, peremptory, exigencies, Genoa, traversed, discipline, precedence, decorous, arca, contemplating.

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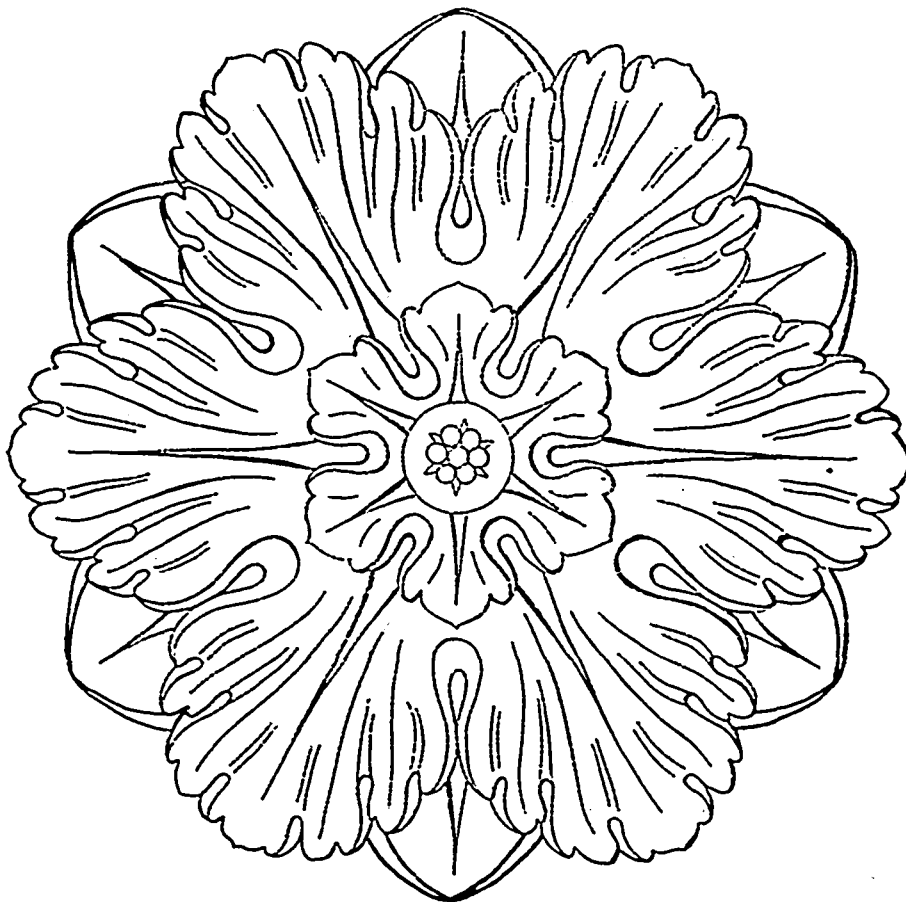
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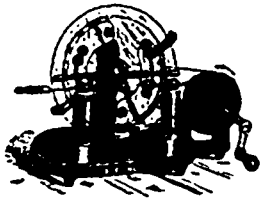
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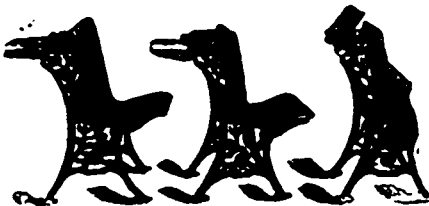
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