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THE CANADA
EDUCATIONAL MONTHLY
AND SCHOOL CHRONICLE.

NOVEMBER, 1880.

AN EPOCH IN THE HISTORY OF QUEEN'S UNIVERSITY,
KINGSTON.

IF it be matter for congratulation when an individual, after a long and laborious struggle, attains to desired success and a happy and honourable position, much more must a similar success attained by a University, after a long and brave conflict with adverse circumstances, be a matter for hearty rejoicing to every thoughtful man and lover of true culture. For such a University must represent no small portion of the intellectual life of a people, and its success is the success of the higher element in a nation's life. And if the consecration of new and spacious halls to the highest intellectual uses be an interesting occasion even when such halls have been erected with little effort out of a rich endowment, how much deeper interest attaches to the occasion when they have been raised by the voluntary contributions and self-sacrifice of citizens, many of whom have not themselves had the advantage of a University education, but who none the less have shewn their value of it for their chil-

dren. Such a building, indeed, embodies a victory of the intellectual over the material, and marks a higher level reached by the life of the community.

It is no marvel, then, that the recent interesting ceremonies connected with the opening of the new building of Queen's University should have drawn together large numbers of graduates and friends of the Institution, as well as some of the more distinguished friends of higher education generally. The occasion was one of no common rejoicing. Not only had the noble building, whose spacious halls were on that day thrown open, been raised as a gift to the University by the citizens of Kingston, but also, mainly through the exertions of one man, the present able and energetic Principal, its formerly very inadequate endowment has within the last two years been so increased as to place it on a sound financial footing for the future, and to give good hope that in time private liberality will supply all that is still lacking in its equipment.

The opening ceremonies, therefore, represented much more than the mere dedication of the beautiful building, though that alone made an epoch in its history. It represented the crowning and completion of many years of anxiety and labour, from the year 1841, when Queen's University was first founded by a few ministers and laymen of the then Church of Scotland in Canada.

At that time the facilities for higher and even for secondary education in Canada were miserably insufficient, the only institution for higher education in Upper Canada, the then King's College, Toronto, restricted its range to members or adherents of the Church of England. Feeling the impossibility, under such circumstances, of educating a native ministry for the Presbyterian Church, a few of her ministers and laymen resolved to found a University to which a theological school should be closely attached. The names of its founders deserve to be recorded in connection with the present stage of its history. They were:—

Ministers—

- Rev. Robert McGill.
- “ Alexander Gale.
- “ John Mackenzie.
- “ William Rintoul.
- “ William T. Leach.
- “ James George.
- “ John Machar.
- “ Peter Colin Campbell.
- “ John Cruikshank.
- “ Alexander Mathieson, D.D.
- “ John Cook, D.D.

Laymen—

- Hon. John Hamilton.
- “ James Crooks.
- “ William Morris.
- “ Archibald McLean.
- “ John McDonald.
- “ Peter McGill.
- Edward W. Thompson, Esq.
- Thomas McKay, Esq.
- James Morris, Esq.
- John Ewart, Esq.
- John Steele, Esq.
- John Mowat, Esq.
- Alexander Pringle, Esq.
- John Munn, Esq.
- John Strang, Esq.

Only two of these now survive to witness its present prosperity. A Royal Charter having been secured, the late Rev. Dr. Liddell was appointed Principal by the Colonial Committee of the Church of Scotland, a Classical Professor was found in the late accomplished Principal Campbell of Aberdeen, and the present veteran Professor of Mathematics and Natural Philosophy, Dr. Williamson, was appointed to the chair, which he still worthily holds. A local habitation was found with difficulty, for Kingston, as the temporary seat of Government, was at that time crowded to its utmost capacity, and the infant University found its cradle in a humble frame building, which intending students, arriving from a distance, had much difficulty in finding out. Since then its fortunes have been full of vicissitude, and adverse events have at times almost threatened its extinction. It has had five removes and one fire. Its Government grant, long continued, on which it largely depended, was at length withdrawn, because its nominal connection with the Presbyterian Church made it a “sectarian” institution, although none could shew a better record of higher educational work done for the country at large. Its own individual endowment was wrecked in the ruin of the Commercial Bank. The double loss imperilled its very existence, but an influential and enthusiastic meeting, held in St. Andrew's Church, Kingston, which seemed inspired by the spirit of the one held in the same place when the University was first initiated, gave a new impetus to its failing fortunes. It became manifest that the University would not go down while there were stout hearts and shoulders to bear it up. Its heroic and lamented Professor Mackerras, whose noble life was lately checked in these pages, and its late Principal, Dr. Snodgrass,

now in Scotland, undertook to canvass the friends of Queen's throughout Canada for a new endowment. The endowment was raised, but Professor Mackerras fell a sacrifice to his exhausting labours, and the health of his coadjutor was also impaired in the trying ordeal. But while the new endowment saved the University from extinction, it was still sadly inadequate for the needs of an Institution of its standing, to which it was a *sine qua non* to keep pace with the advancing requirements of the times. This was seen so clearly by its present head, Principal Grant, that soon after accepting office he sounded the note of a new campaign to raise an increased endowment, and to provide buildings worthy of a Canadian University of forty years' standing. To his eloquent appeals and unremitting exertions the people have responded nobly. The amount he asked for, an endowment at first thought Utopian, has been all, or nearly, raised in the country at large, and Kingston has built the stately structure of which the foundation stones were laid in June, 1879, by the Governor-General and the Princess Louise, and which has just been so auspiciously inaugurated.

The building was thrown open to the public for the first time on the 14th of October, and numbers of old graduates, trustees, and citizens of Kingston, availed themselves of the opportunity of inspecting its fine halls and class-rooms. It is built in the Norman-Gothic style, and most appropriately of stone from the "limestone city," relieved by dressings of Ohio freestone. Its position, crowning a gentle slope, adds to its fair appearance and gives it a fine view over the city, lake and surrounding country. The lower floor is occupied by corridors, class-rooms, professors' rooms, and the museum. On the upper floor are the fine Convocation Hall and li-

brary, more class-rooms, and the senate-room, while a massive square tower, eighty-six feet high, surmounts the whole, and gives a magnificent view over lake and river. The Convocation Hall is a fine room of sixty by forty-five feet, the walls being in brick of two colours, with an open timber roof in natural varnished wood. The windows are of stained and frosted glass, with a handsome rose-window above the platform. Around the platform hang four fine oil portraits, mute memorials of four men, gone to their rest, who well deserve to be so commemorated—the Rev. Dr. Liddell, first Principal of the College; the Rev. Dr. Machar, its second Principal, and one of its most self-sacrificing and devoted friends; the Rev. Dr. Leitch, another Principal who died in harness; and the revered and lamented Professor Mackerras, whose generous self-devotion needs no further tribute here. The library is also a fine and tasteful room, with plenty of space for the donations of books which may be expected ere long to find their way to its shelves. Every convenience for reading and consulting is afforded, an advantage to which students who knew by experience the inconvenience of the former cramped library will be ready to appreciate. The fittings and furnishings of all the rooms are in excellent taste, the class-rooms spacious and admirably fitted for their purpose, and the bright and airy aspect of the whole most cheerful and attractive. As Queen's University has generously opened her halls to female students, it may be expected that they will ere long avail themselves of so inviting an entrance to the temple of learning, and thus its title of University will receive its fullest justification.

The opening ceremonies began with a religious service on the evening of October 14th. Favoured with some of our loveliest autumn weather to give the occasion its crowning grace,

the buildings looked especially picturesque in the full radiance of an October moon, with every window pouring a stream of light from within. At eight o'clock the Convocation Hall was filled with a large audience of ladies and gentlemen, the students occupying a spacious gallery above the entrance, and the platform was filled with the gentlemen officially connected with the College, and their distinguished guests. Principal Grant occupied the chair, supported by the Chancellor elect, Mr. Sandford Fleming, C.M.G., and the Hon. Edward Blake, Chancellor of the University of Toronto. The Rev. Dr. Macrae, Moderator of the Presbyterian Church in Canada, Rev. Principal Nelles of Victoria College, Hon. M. Joly, Hon. Alex. Morris, Rev. Dr. Bell of Walkerton, Rev. D. J. Macdonnell of Toronto, and other distinguished clergymen, trustees and ex-graduates, occupied seats on the platform. The proceedings were begun by the Rev. Principal Grant reading the thanksgiving verses from the 103rd Psalm, followed by a hymn sung by a choir of students and a dedicatory prayer by Dr. Macrae, closing with the Lord's Prayer, which concluded the dedicatory service. The Mayor of Kingston, Mr. Carson, then, in an appropriate speech, formally presented the building to the University in the name of the citizens of Kingston. The presentation was gracefully acknowledged by Principal Grant, who paid a deserved tribute to the donors of the building and to all who had aided in furthering the now accomplished work. He paid a touching tribute also to his late colleague, Professor Mackerras, and to Dr. Williamson, who was the sole survivor of the original College staff, and who was about to speak of the various habitations of the University up to the present time, and expressed the hope that the Queen's University would be to Canada in future years a well of

pure water undefiled, and that many might be trained within its walls to a higher, nobler, more Christ-like life.

The Rev. Professor Williamson, LL.D., followed the Principal with a history of the various abodes in which the College had found a temporary resting-place, from the old frame building in which it was first inaugurated, to the present beautiful building which is to be its permanent home. He compared the Institution to the young oak which spreads its branches and strikes its roots deeper and deeper, through storm and sunshine, till it becomes the stately tree, to endure for ages. The veteran Professor retired, as he had come forward, amid the enthusiastic cheers of the students, with whom he is a special favourite.

The next speaker, the Hon. Edward Blake, then came forward amid an enthusiastic burst of applause from the students in the gallery and the audience below. He expressed his pleasure at being present on such an occasion as the official representative of Toronto University. He congratulated Kingston on the part she had taken with regard to the higher education of the country, which was a benefit to the community at large. He did not fear there being too many universities. There were not too many at present for the growing needs of the country. Two things were wanted to make a good university—a good staff, and a large number of students, both of which were possessed by Queen's University. He spoke of the advantage of undenominational education and the influence which it must have in promoting the greater unity of Christendom. He referred to what he believed would be the benefits of concentrating the degree-giving power in a single national university, which would raise the standard of all degrees, but which, he feared, was a long way off yet, and compared Canadian education with

that of Scotland and the United States, and maintained the inferiority of the former on the ground that so comparatively few pass from the elementary to the higher education. Many more, he thought, should be drafted from the schools to the universities. The best aristocracy would be one of high culture and moral value. While the general average of learning was now elevated far above that of the ages which had given to us the master-pieces of classical learning, there was still a great deal to be done—especially in the promotion of general knowledge. He expressed a special interest in the library, which he hoped would soon be filled, since Canada stands much in need of first-class libraries as a means of disseminating knowledge, and such a library established in Kingston would set an example soon to be followed by other towns and cities. He concluded a long and able speech with the expression of his own good wishes, and of the regret of his brother, Vice-Chancellor Blake, for his inability to be present.

The Hon. H. G. Joly, as the representative of Quebec, followed with a few cordially expressed words of greeting, in which he referred to the growing literature of Canada and especially to M. Frechette, who had recently gained such honours in France. He concluded his address with an earnest plea for a wider, more scientific, and more practical education in universities, such as should fit men for more fully appreciating the wonder and the beauty of God's beautiful creation. He drew a picture of an ideal university, which Principal Grant followed up by humorously saying that M. Joly had just sketched the portrait of Queen's University.

The Hon. Alexander Morris then spoke, paying a just tribute to the patriotism and public spirit of the men who had first founded Queen's

University, who had nearly all passed away, so that the list of their names sounded like a roll-call of the illustrious dead. He spoke also of the benefits of university consolidation, placing the degree-giving power in a national university around which the present degree-conferring colleges should be grouped. The evening's proceedings were concluded by a few remarks from Principal Grant, who observed that while he thought college consolidation impracticable, he heartily approved of university consolidation.

The proceedings of Friday consisted of the formal installation of the Chancellor, Mr. Sandford Fleming, at three p.m., and the Chancellor's conversazione in the evening. After being formally installed and welcomed to his new dignity, Mr. Fleming delivered an able and interesting address, in which, after modestly disclaiming any fitness on his part for his elevation to the highest dignity connected with the University, he entered at some length into the question as to whether the dead languages should retain their time-honoured preponderance in the curriculum of universities. He maintained that to devote to these so large a portion of the time, labour, and energy of the student was to make it impossible for him to obtain more than the most superficial acquaintance with modern intellectual life. He thought that the English language and literature should have the place of honour, and that such a language as Sanscrit, the basis of so large a proportion of the speech of the earth's population, should have its place in a university curriculum. He expressed his satisfaction to know that changes had recently been introduced into the curriculum of Queen's University, which tended to make it more elastic and to develop the varied capacity of students. New Chairs,

however, were needed, for which new endowments would be necessary, but he trusted that the necessary endowments would be forthcoming, and felt justified in saying that this University would never find it necessary to appeal to the country in vain. Among new Chairs to be desired, he suggested one in political science, one in the philology of oriental languages not now taught, and last, but not least, one in geology and mineralogy, since no literature could be more sublime than the literature of the rocks, which preserved the "vital mechanism of perished centuries" in sepulchres ten thousand times more ancient than the first works of the human hand, or the first thoughts of the human mind. He concluded with an exhortation to the students to bring to bear on their work patience, earnestness of purpose, self-reliance, perseverance, sobriety of speech and of behaviour, reminding them, in the words of a living statesman, that "knowledge is like the mystic ladder in the patriarch's dream—maintaining, as it were, the communication between man and heaven."

An interesting episode in the proceedings now took place—the conferring of the degree of Doctor of Divinity on the Rev. Donald Macrae, M.A., Moderator of the General Assembly of the Presbyterian Church, and on the Rev. James Nish, a delegate from Australia to the recent Pan-Presbyterian Council at Philadelphia. Each of these gentlemen made a short speech, Dr. Macrae congratulating the University on its recent remarkable strides, and putting in a bold plea for the progress and development of thought in theology as well as in other departments of human knowledge, and congratulating Principal Grant on having ably defended this position at the recent Presbyterian Council in opposition to those who asserted that the limit of such

progress had been already reached. Dr. Nish communicated some interesting particulars as to Australian universities, and the noble liberality displayed by Presbyterian laymen in Melbourne towards the University of that place, one man having given \$30,000 for the erection of a convocation hall, besides other donations. He spoke of the educational system of Australia, in which primary education was entirely free, while secondary education was paid for, but in order to secure its benefits to the poorer classes, liberal exhibitions were provided for.

This interesting meeting was then brought to a close by Principal Grant's announcement of several prizes and gold medals to be competed for—one of them to be given by the Governor-General, and one by the Chancellor.

The conversazione, given by the Chancellor, was held in the University building on Friday evening, all the rooms being lighted and thrown open, so as to constitute an ample promenade. Large numbers of guests began to pour in from eight o'clock till nine—first paying their respects to the Chancellor and Principal in the library. The varied costumes of the ladies, and a few military uniforms interspersed, made the scene a bright and animated one, and the evening seemed one of general enjoyment. Lecturettes and chemical experiments were conducted in some of the classrooms, and attracted many spectators. Refreshments, choice and ample, were provided in the still empty museum. At ten the Convocation Hall was well filled in order to listen to speakers well known in connection with education and culture in Canada. The Rev. Dr. Nelles, President of Victoria College, first addressed the audience, taking for his text a remark which had been made by Professor Goldwin Smith, that the greatest uni-

versities had been built up by private benefactions. He referred also to collegiate consolidation, which would tend to break down sectarianism and religious bigotry, things which he hated the more the longer he lived. He and the late Principal Leitch, to whose ability and largeness of mind he paid a fitting tribute, had in former days worked hard for university consolidation, and its failure was due not to narrowness on their part, but on that of University College. He believed that the day for university consolidation had gone by, since strong universities increasing their building accommodation, their teaching staff, and their students, would be less willing to amalgamate than the same institutions at an earlier stage. He concluded with warm congratulations to Queen's University on the progress she had made within the last few years.

Principal Grant then, in the warmest terms, introduced Prof. Goldwin Smith, a man who had done much honour to Canada in making it his residence, and whom, though he might differ widely from him in matters of opinion, he could thoroughly appreciate and admire as a scholar, a writer, and a friend of true culture.

Prof. Smith then came forward, and was greeted with prolonged applause. He gracefully expressed his pleasure at the installation of Mr. Sandford Fleming as Chancellor of Queen's University, and went on to say that he came there with greetings and good wishes, as the representative of the ancient University of Oxford, which his friend, John Bright, had characterized as "the seat of dead languages and undying prejudices." He said, however, that Mr. Bright had been able to admire the beauty and the antique associations of Oxford, as much as any one could do, when standing with him at his own door, on a bright summer afternoon, with the beautiful

old city lying at their feet. Oxford, he said, had, in some respects, modified her classical studies, which, however, he contended, were *not* connected with "undying prejudices," but tended to promote liberality of thought, as could be seen in many eminent classical scholars. He did not think that the treasures of the classical world could ever be fully opened through the media of translations to the non-classical scholar—there being the same difference between the original and the best translation that there is between a master-piece of ancient sculpture and the most exact cast. He distinguished, however, between Latin and Greek. The abolition of the latter as a compulsory study he had himself voted for. But Latin was much more necessary to the student of language, and was the key to all the modern languages, which a good Latin scholar could easily master in a short time. He referred to Oxford as his ideal of a university, having twenty-four colleges united under one university body, and ended his graceful and eloquent address with warm congratulations to Queen's University on her present prosperous condition.

Professor J. Clarke Murray, LL.D., expressed the congratulations and good wishes of McGill University, and referred to those whose places were vacant there,—more especially to the late treasurer, Mr. William Ireland, and to his honoured friend, Professor Mackerras. Although seen among them no longer, he might be allowed to fancy that the departed friends of the College were to-night

"perchance, perchance among the rest,
And, though in silence, wishing joy!"

The Rev. R. Torrance, Moderator of the Synod of Toronto and Kingston, closed the proceedings with a few congratulatory remarks, and the audience soon after began to disperse,

after one of the pleasantest gatherings in connection with the University.

Saturday morning was devoted to tree-planting on the Campus by the non-resident graduates,—a long line of trees by mid-day bearing witness to the number who desired to bear a part in this commemorative act. As it was University day, it was to have been distinguished by students' games, and a concert by the students in the evening, but, as a brooding storm had come at last, both of these had to be postponed till Monday. On Sunday, appropriate sermons were preached in the Convocation Hall by the Moderator of the General Assembly in the forenoon, the Rev. Principal Sheraton of the Episcopal Divinity School, Toronto, and the Rev. President Nelles, of Victoria College, in the afternoon and evening. At the close, Principal Grant announced the opening ceremonies concluded, and declared his ideal of a college as being one in which all the students should lead up to Christian truth as their crown and climax. He ended by reading the following poem written for the occasion, and dedicated to himself and the Chancellor:

"Lay down the trowel, the hammer and rule,
Rest the workman and cease the tool,
For, fair as an embodied dream
The stately walls in the moonlight gleam,

Or, touched by the liquid golden light
Of the warm October sun,
They seem to smile on our gladdened sight,
As we heartily say—' Well done !'

"Fair and noble, yet not alone,
In the outward beauty of form and stone,
They are touched by a radiance more softly bright
Than ever flowed from earthly light,—
The quenchless light of a noble past
That shall never fade nor die,
For, long as the soul itself shall last,
That light in the purer sky.

"Not alone the good right hand
Of master and workman wrought and planned
Things more precious than marble or gold ;
To our inner vision these walls enfold
Earnest purpose and noble thought,
Struggle and toil of the sainted dead
With living stones its walls are wrought
And its sure foundations laid !

"Child of a thousand hopes and fears,
Linking the present with by-past years,
A noble heritage nobly won
Mid toil and darkness in days by-gone,
May her future be bright as the autumn light
That shines on her walls to-day,—
Darkness of sorrow and clouds of night
Fled, like the mists, away.

"*Esto perpetua!*—may she be
A light to the ages yet to be,
In our country's future a waxing star,
Shedding a stream of light afar,
Guiding her sons to all high emprise,
Waking high impulse and noble aim
In making a nation truly wise,
Be her enduring fame !"

—FIDELIS.

AN ESSAY ON PUNCTUATION.*

JUDGMENT determines the relations, whether of thought or of language, which marks of punctuation indicate; taste determines the choice, when good usage admits of a choice, between two modes of indicating those relations: judgment and taste are, therefore, the guides to correct punctuation.

Since punctuation is one of the means by which a writer communicates with his readers, it naturally varies with thought and expression: the punctuation of "Tristram Shandy" will therefore differ from that of "The Rambler;" and in a less degree the punctuation of Burke's Orations, from that of Macaulay's Essays. Hence no one writer—even were books printed correctly, as is rarely the case—can be taken as a model. Hence, too, a system of rules loaded with exceptions, though founded upon the best usage and framed with the greatest care, is as likely to fetter thought as to aid in its communication.

Assistance may, however, be obtained from a few simple rules founded upon the principle that *the purpose of every point is to indicate to the eye the construction of the sentence in which it occurs*,—a principle which is best illustrated by examples of *sentences correctly constructed* as well as *correctly punctuated*. One who knows few rules, but who has mastered the fundamental principles of construction, will punctuate far better than one who slavishly follows a set of

formulas. The latter will not know how to act in a case not provided for in any formula: the former will readily understand that the letter of a rule may be violated, in order to give effect to its spirit; that ambiguity and obscurity should, above all things, be avoided; and that marks of punctuation which are required on principle may be omitted when they are disagreeable to the eye or confusing to the mind.

Some rules are common to spoken and to written discourse: but the former is directed to the *ear*, the latter to the *eye*; and the pauses required by the ear or the voice do not always correspond with the stops required by the eye. A speaker is often obliged to pause between words which should not be separated by marks of punctuation; or he is carried by the current of emotion over places at which marks of punctuation would be indispensable: he has inflection, emphasis, gesture, in addition to pauses, to aid him in doing what the writer has to do with stops alone.

A slight knowledge of punctuation suffices to shew the absurdity of the old rules—that a reader should pause at a comma long enough to count one, at a semicolon long enough to count two, and at a colon long enough to count three. The truth is that, in some of the most common cases in which a comma is necessary, a speaker would make no pause. For example:

No, sir.

Thank you, sir.

On the other hand, sentences often occur in which a comma can at no point be properly inserted, but which

* Reprinted from Prof. A. S. Hill's "Principles of Rhetoric."

no one can read without making one or more pauses before the end. For example :—

The art of letters is the method by which a writer brings out in words the thoughts which impress him.

I lately heard a man of thought and energy contrasting the modern want of ardour and movement with what he remembered in his own youth.

The great use of a college education is to teach a boy how to rely on himself.

In punctuation the following points are used :—

Comma	[,]
Semicolon	[;]
Colon	[:]
Period	[.]
Interrogation Point	[?]
Exclamation Point	[!]
Dash	[—]
Marks of Parenthesis	[()]
Apostrophe	[']
Hyphen	[-]
Marks of Quotation	[" " or ' ']

None of these points should be used exclusively or to excess; for each has some duty which no other point can perform. There are, however, a number of cases in which the choice between two points—as comma and semicolon, colon and semicolon—is determined by taste rather than by principle.

A student of punctuation should ask himself why in a given case to put in a stop rather than why to leave one out; for the insertion of unnecessary stops is, on the whole, more likely to mislead a reader than is the omission of necessary ones.

Perhaps the most intelligible, as well as the most compendious, method of giving a general idea of the principal uses of the several marks of punctuation is to enlarge a short sentence by making successive additions to it.

EXAMPLES.

1. John went to town.
2. John Williams went to the city.
3. Popular John Williams boldly went to the city of New York.

4. Popular and handsome John Williams boldly went to the City of New York.

1 to 4. Complete sentences requiring a period at the end (XV.). No other point possible, because words closely connected stand next to one another, and the construction is plain.

5. Popular, handsome John Williams boldly went to the city of New York.

5. Comma after "popular" in place of "and" (I. c).

6. Popular, handsome, and wealthy John Williams boldly went to the city of New York.

6. Comma before "and," because each of the three adjectives stands in a similar relation to the noun (I. g.)

7. Popular, handsome, and wealthy John Williams, son of Samuel Williams, boldly went to the city of New York.

7. "Son of Samuel Williams" between commas, because in apposition with "John Williams" (II. a), and parenthetical (VI. a).

8. I assure you, gentlemen of the jury, that popular, handsome, and wealthy John Williams, son of Samuel Williams, boldly went to the city of New York.

8. "Gentlemen of the jury" between commas, because indicating to whom the whole sentence, one part as much as another, is addressed (III. c), and because parenthetical (VI. a).

9 (1). I assure you, gentlemen of the jury, that popular, handsome, and wealthy John Williams, son of Samuel Williams, went, with the boldness of a lion, to the city of New York.

9 (1). "With the boldness of a lion" between commas,—though its equivalent "boldly" (in 8) is not,—because the construction of an adverbial phrase is more uncertain than that of a single word (IV. a).

9 (2). I assure you, gentlemen of the jury, that popular, handsome, and wealthy John Williams, son of Samuel Williams, went with the boldness of a lion to the city of New York.

9 (2). Commas omitted after "went" and "lion" because disagreeable to the eye (see p. 491),—a practical reason which in this case overrules the theoretical reason for their insertion.

10 (1). I assure you, gentlemen of the jury, that popular, handsome, and wealthy John Williams, son of Samuel Williams, who is now over seventy years of age, boldly went to the city of New York, that city which is so badly governed.

10 (1). Comma between "Williams" and "who," because the "who" clause makes an additional statement (V. *a*), in the nature of a parenthesis (VI. *a*). No comma between "city" and "which," because the "which" clause is an integral part of the sentence, and is necessary to the sense (V. *b*).

10 (2). I assure you, gentlemen of the jury, that popular, handsome, and wealthy John Williams, son of Samuel Williams, who is now over seventy years of age, boldly went to the city of New York,—that city which is so badly governed.

10 (2). Dash added to comma between "York" and "that" to relieve the eye from too many commas near together (VI. *c*),—a reason strengthened in paragraph 11 by the additional commas.

11. I assure you, gentlemen of the jury, that popular, handsome, and wealthy John Williams, son of Samuel Williams, who is now over seventy years of age, boldly went to the city of New York,—that city which, as everybody knows, is badly governed.

11. "As everybody knows" between commas, because it is a parenthetical expression which can be lifted out of the sentence without injuring the construction (VI. *a*).

12. To shew you how badly governed that city is, I need only refer to the "Quarterly Review," vol. cxi. p. 120, and "The Weekly Clarion," No. xl. p. 19.

12. Marks of quotation to indicate that the "Quarterly Review" and "The Weekly Clarion" are called by their names (XVII. *a*). Periods after cxi. and xl., because in better taste and more agreeable to the eye than commas (XX. *e*).

13 (1). The first tells us about a man who is called John Doe; the second, about Richard Roe. Doe was charged with larceny; Roe, with breach of trust.

13 (1). Commas after "second" and "Roe," to take the place of words necessary to complete the sense (VII. *a*). In this case semicolons required between the clauses.

13 (2). The first tells us about a man who is called John Doe, the second about Richard Roe. Doe was charged with larceny, Roe with breach of trust.

13 (2). Commas omitted after "second" and "Roe," because the sense is plain without them (VII. *b*). In this case commas required between the clauses.

14. Mr. Williams was bold.

14. Period after Mr., an abbreviation (XVI. *a*). So, too, in paragraph 12, after "vol.," "No.," "p."

15 (1). If Mr. Williams was bold, he was also prudent.

15 (1). Comma required between the principal and the dependent clause (VIII. *a*.)

15 (2). Mr. Williams was as prudent as he was bold.

15 (2). No comma required, because the principal clause merges in the dependent one (VIII. *b*).

16 (1). Mr. Williams was bold, and he was also prudent.

16 (1). Two independent clauses separated by a comma (IX. *a*).

16 (2). Mr. Williams had all the boldness of the lion; and he also had the wisdom of the serpent.

16 (2). Two independent clauses separated by a semicolon (IX. *b*).

17 (1). Mr. Williams had all the boldness of the lion; and he also had the wisdom of the serpent: but he lacked the innocence of the dove.

17 (1). Colon after "serpent" to indicate that the clause after it is balanced against the two clauses before it (XII. *a*).

17 (2). Mr. Williams had all the boldness of the lion, and he also had the wisdom of the serpent; but he lacked the innocence of the dove.

17 (2). Same effect produced by substituting comma for semicolon, and semicolon for colon (XII. *b*).

18 (1). Mr. Williams had all the boldness of the lion; and he also had the wisdom of the serpent: but he lacked the innocence of the dove; he lacked simplicity; he lacked purity; he lacked truthfulness.

18 (1). Series of short sentences after "dove" separated by semicolons (XI. *a*).

18 (2). Mr. Williams had all the boldness of the lion, and he also had the wisdom of the serpent; but he lacked the innocence of the dove,—he lacked simplicity, he lacked purity, and he lacked truthfulness.

18 (2). Comma and dash substituted for semicolon, because succeeding clauses no longer in a series with the preceding one, but in apposition with it (II. *d*).

19. Mr. Williams had all the boldness of the lion; and he also had the wisdom of the serpent: but he lacked the innocence of the dove; he lacked simplicity; he lacked purity; he lacked truthfulness,—what good thing did he not lack?

19. Dash rendered necessary by the sudden change of construction (XIV. *a*). Interrogation point to indicate a direct question (XV).

20 (1). Do you suppose that Mr. Williams went to New York for an honourable purpose? that he had no improper motive? no criminal design?

20 (1). Interrogation points to indicate successive questions; small letters instead of capitals to indicate closeness of connection, like that of independent clauses in an affirmative sentence (XV. *a*).

20 (2). Do you suppose that Mr. Williams went to New York for an honourable purpose, that he had no improper motive, no criminal design?

20 (2). Same result reached by substitution of commas for interrogation points.

21. Honour! his honour!

21. Exclamation points as used in sentences closely connected (XV. *b*).

22. I tell you that his purpose was dishonourable; that his motive was most improper; that his design was both legally and morally criminal.

22. Semicolons to separate dependent expressions in a series (X. *a*).

23. He was, as I have said, bold: much may be accomplished by boldness.

23. Colon between short sentences not closely connected (XI. *b*).

24. His purposes were: first, to meet his confederates; secondly, to escape detection.

24. Colon before particulars formally stated (XIII. *a*).

25. Such were Mr. Williams's purposes, and such were his confederates' purposes.

25. Apostrophes to indicate the possessive of a singular, and that of a plural, noun (XIX. *c*).

26. Such were Mr. Williams's purposes, and such were his confederates' purposes,—purposes which I will not characterize as they deserve.

26. Dash to give rhetorical emphasis (XIV. *c*).

27 (1). "How do you know this?" I am asked.

27 (2). I am asked, "How do you know this?"

27 (3). I am asked: "How do you know this? On what evidence is the charge founded?"

27 (4). I am asked how I know this, on what evidence I make the charge.

27 (1 to 4). Quotation points used with a direct question (XVII. *a*). Interrogation point enough if question comes first. If it comes last, comma used when but one question asked (XIII. *c*); colon, when two or more (XIII. *b*). Indirect question punctuated like affirmative sentence.

28. I answer that I have known it since March, '67.

28. Apostrophe to indicate omission of figures (XIX. *b*).

29. I answer that I have known it since March, 1867; since his father-in-law's decease.

29. Hyphen to join parts of a derivative word (XVIII. *b*).

30. The authorities on which I shall rely are: 11 Mass. Rep. 156; 2 Kent's Com. 115-126.

30. Colon to supply ellipsis of "the following" (VII. *c*). Style of quoting law books.

31 (1). I beg you to give close attention to these authorities, which, though not recent, are important, pertinent to the case in hand, and; therefore, not to be slurred, neglected, or sneered at.

31 (1). Every comma inserted in obedience to some rule.

31 (2). I beg you to give close attention to these authorities, which though not recent

are important, pertinent to the case in hand, and therefore not to be slurred, neglected, or sneered at.

31 (2). Commas omitted for reasons of taste and for the comfort of the eye.

I.

WORDS IN A SERIES.

(1) No comma [,] is inserted before or after conjunctions—such as *and*, *or*, *nor*, *but*, *yet*—when employed to connect two words belonging to the same part of speech and in the same construction (a), or to connect two expressions which are in the same construction, and are used as if they belonged to the same part of speech (b).

(2) A comma should, however, be inserted where the word before the conjunction is qualified by a word that is not intended to qualify the word after the conjunction (c); or where the word after the conjunction is followed by an expression which qualifies that word alone (d).

(3) A comma is required between such words or expressions, when they are not connected by a conjunction (e); or when there are more than two such words or expressions (f), even though a conjunction is put before the last one in the series (g). If, however, the word or expression following the conjunction is more closely connected with the word or expression immediately preceding it than with the other words in the series, the comma is omitted (h).

(4) If the conjunction is repeated before each word or expression in the series, the comma is usually omitted where the words between which the conjunction stands are closely united in meaning (i), and is sometimes inserted where they are not so united (j).

(5) If the series is composed of several words unconnected by conjunctions, a comma is put after the last word, in order to indicate that all

the words in the series bear the same relation to the succeeding part of the sentence (k); but sometimes, as where the sentence is so short as to present no difficulty, this rule is disregarded (l). If the succeeding part of the sentence is connected with the last word in the series, but not with the preceding words, the comma is omitted (m).

(a) Sink *or* swim, live *or* die, survive *or* perish, I give my hand *and* my heart to this vote.

(a) A just *but* melancholy reflection embittered, however, the noblest of human enjoyments.

(b) The new order of things was inducing laxity of manners *and* a departure from the ancient strictness.

(c) He suddenly *plunged*, *and* sank.

(c) His mind was profoundly *thoughtful*, *and* vigorous.

(d) All day he kept on *talking*, *or* thinking about his misfortunes.

(d) 'Twas certain he could *write*, *and* cipher too.

(e) His trees extended their *cool*, *umbrageous* branches.

(e) Kinglake has given Aleck a *great*, *handsome** chestnut mare.

(f) These are no mediæval personages; they belong to an *older*, *pagan*, *mythological* world.

(g) This is the best way to strengthen, *refine*, *and* enrich the intellectual powers.

(g) He had a hard, *gray*, *and* sullen face, piercing black eyes under bushy gray eyebrows, thin *lips*, *and* square jaw.

(g) It is the centre of trade, the supreme court of fashion, the umpire of rival *talents*, *and* the standard of things rare and precious.

(h) I have had to bear heavy rains, to wrestle with great storms, to fight my way *and* hold my own as well as I could.

(i) There speech *and* thought *and* nature failed a little.

(i) We bumped *and* scraped *and* rolled very unpleasantly.

* There is no comma here, because the writer is speaking, not of a mare that is handsome *and* chestnut, but of a chestnut mare that is handsome.

(j) For his sake, empires had risen, and flourished, and decayed.

(i) (j) And feeling all along the garden wall,

Lest he should swoon and tumble
and be found,

Crept to the gate, and open'd it,
and closed.

(i) (d) I sat and looked and listened, and thought how many thousand years ago the same thing was going on in honour of Bubbastis.

(k) The colleges, the clergy, the lawyers, the wealthy merchants, were against me.

(l) All great works of genius come from deep, lonely thought.

(i) Punish, guide, instruct the boy.

(m) Lydgate's conceit was of the arrogant sort, never simpering, never impertinent, but massive in its claims and benevolently contemptuous.

In the example under (j), some writers would omit the commas. Their omission would be more usual in a colloquial than in an oratorical style, such as that of the passage in Macaulay from which the sentence is taken.

II.

WORDS IN APPPOSITION.

A comma is put between two words or phrases which are in apposition with each other (a), unless they are used as a compound name or a single phrase (b). Instead of a comma, the dash [—] alone (c), or combined with the comma (d), is sometimes used.

(a) Above all, I should speak of Washington, the youthful Virginian colonel.

(a) Next to the capital stood Bristol, then the first English seaport, and Norwich, then the first English manufacturing town.

(b) On the seventeenth of November, 1558, after a brief but most disastrous reign, Queen Mary died.

(b) Ward Room, Franklin Schoolhouse, Washington Street, Boston.

(c) This point represents a second thought—an emendation.

(c) Do I want an arm when I have three right arms—this (putting forward his left one), and Ball and Troubridge?

(d) The two principles of which we have hitherto spoken,—Sacrifice and Truth.

(d) He considered fine writing to be an addition from without to the matter treated of,—a sort of ornament superinduced.

In a sentence constructed like the first one under (c), the dash is preferable to the comma; for the dash indicates unmistakably that the two expressions between which it stands are in apposition, whereas the comma might leave room for a momentary doubt whether "an emendation" was the second term in a series, of which "a second thought" was the first term. A similar remark can be made about the second sentence under (c).

Where, as in the sentences under (d), the words in apposition are separated from each other by several other words, the dash indicates the construction more clearly than the comma would do.

III.

VOCATIVE WORDS.

Vocative words or expressions are separated from the context by one comma, when they occur at the beginning (a) or at the end (b) of a sentence; by two commas when they occur in the body of a sentence (c).

(a) Mark Antony, here, take you Cæsar's body.

(b) What would you, Desdemona?

(c) Mr. Adams and Mr. Jefferson, fellow-citizens, were successively Presidents of the United States.

(c) I remain, Sir, your obedient.

(c) No sir, I thank you.

IV.

ADVERBS AND ADVERBIAL EXPRESSIONS.

Adverbial (a), participial (b), adjectival (c), or absolute (d) expressions

are separated from the context by a comma or commas. So are many adverbs and conjunctions when they modify a clause or a sentence or connect it with another sentence (e).

(a) By the law of *nations, citizens* of other countries are allowed to sue and to be sued.

(a) The *book, greatly* to my disappointment, was not to be found.

(b) Without attempting a formal definition of the *word, I* am inclined to consider rhetoric, when reduced to a system in books, as a body of rules derived from experience and observation, extending to all communication by language and designed to make it efficient.

(b) Returning to the *question, let* me add a single word.

(c) Violent as was the *storm, it* soon blew over.

(d) To make a long story *short, the* company broke up, and returned to the more important concerns of the election.

(d) To state my views *fully, I* will begin at the beginning.

(e) The pursuers, *too, were* close behind.

(e) *Finally, let* us not forget the religious character of our origin.

(e) *Here, indeed, is* the answer to many criticisms.

(e) *Therefore, however* great the changes to be accomplished, and however dense the array against us, we will neither despair* on the one hand, nor on the other* threaten violence.

* Commas omitted here for reasons of taste. See p. 491.

“Many words ranked as adverbs are sometimes employed conjunctively, and require a different treatment in their punctuation. When used as conjunctions, *however, now, then, too, indeed,* are divided by commas from the context; but when as adverbs qualifying the words with which they are associated, the separation should not be made. This distinction will be seen from the following examples:—

“1. HOWEVER.—We must, *however,* pay some deference to the opinions of the wise, *however* much they may be contrary to our own.

“2. NOW.—I have *now* shown the consistency of my principles; and, *now,* what is the fair and obvious conclusion?

“3. THEN.—On these facts, *then, I* then rested my argument, and afterwards made a few general observations on the subject.

“4. TOO.—I found, *too,* a theatre at Alexandria, and another at Cairo; but he who would enjoy the representations must not be *too* particular.

“5. INDEED.—The young man was *indeed* culpable in that act, though, *indeed,* he conducted himself very well in other respects.

“When placed at the end of a sentence or a clause, the conjunction *too* must not be separated from the context by a comma; as, ‘I would that they had changed voices *too.*’”†

† Wilson: Punctuation. p. 73.

(To be concluded in our next.)

REMINISCENCES OF CHARTERHOUSE.

BY AN OLD CARTHUSIAN.

Being a series of Short Sketches descriptive of Public School Life in England.

PREFATORY.

I HAVE often thought that a description of Public School life in England would not be wholly uninteresting to a portion at least of the Canadian public. In writing the following sketches it has been my object to draw a true and unexaggerated picture of a boy's life at Charterhouse.

At last the day arrived on which I was to go to Charterhouse, the day which I had looked forward to so eagerly and, still, dreaded so much. I had not hitherto been to school; my education had been entrusted to the care of a tutor, who had allowed me to do much as I pleased.

Having thus never been subject to restraint, I feared that the strict discipline of a public school would be not a little irksome to me, at any rate just at first. It was certainly high time I went to school. At home I had forever been getting into scrapes; my parents' only consolation appeared to be that *I was going* to school, where, I should, as they perpetually warned me, be punished in a way I should richly deserve. The punishment alluded to was, of course, a flogging, which, at that time, my parents found themselves incapable of admin-

istering with sufficient severity to produce any effect. I had, in fact, got beyond them. All new boys have to put up with a certain amount of "humbug" when they first go to a public school; my sister, whom I did not treat with the respect which she insisted was due to her, on account of the difference in age between us, used to derive great satisfaction from assuring me, that, in my case, the teasing that I should be obliged to undergo, would be very severe. "You may depend upon this," she would say, "the bigger boys will stand no impertinence from you whatever." I recollect well, how, as I lay in bed on my last night at home, I thought over all this, and wondered how the morrow would end? Should I be happy in my new life? What I would have given for the first week to have been over! Yet, as it had to come, I determined to face it bravely. I made up my mind to take all knocking about from the boys in good part, still, as I thought of leaving home for such a new, strange life, a lump arose in my throat which I could not keep down, and my eyes became moist. Never had home appeared so dear to me as at that moment! But, then, as I remembered my resolution to please my parents by working hard and getting on, my tears no longer flowed, my heart swelled with pride, and I dreaded nothing.

I was disappointed on waking the next morning, to find the weather threatened to be nasty. My spirits have always varied more or less with the barometer, and, on that day, I hoped the glass would have stood high and the day been bright and warm.

Excitement, however, kept me from dwelling upon any sad thoughts, and when at last the moment arrived for me to wish my people good-bye, I found that it was they who needed comforting, not I.

On reaching the railway station, I looked anxiously about me for any Charterhouse boys; those that I saw were all new; I could easily tell that by the sheepish look they all wore. I did not take the slightest interest in them, indeed I felt a sort of contempt for them, and wished to be taken for an old boy. With this object in view, I strutted about with that air of jaunty confidence invariably assumed by the smaller fry of a public school. They all looked at me so respectfully that I felt my acting had produced the desired effect.

No old boys were to be seen at all. I afterwards learnt it was not "etiquette" for an old boy to return by an early train. The last train of all was invariably the fullest.

The entrance examination was to take place at three o'clock in the afternoon, by which time all new boys were expected to be present.

In about an hour, we arrived at Godalming, and immediately I asked my way to Mr. L——'s house, which I had been told was to be mine. Mr. L—— was at luncheon; he shook hands with me very graciously and introduced me to his sister, who lived with him and looked after the household affairs. Sitting in silence at the table were two other new boys, to whom I was also introduced.

The luncheon was decidedly a dull one; we all felt very awkward; for my part, I was not the least inclined

either to eat or to help Miss L—— in her endeavours to get up a conversation between us new boys. Mr. L—— hoped we should get on, like the school and *his house*, by which, I fancy he meant himself, and then relapsed into silence. Miss L—— expressed similar wishes in different words, and then relapsed into silence also.

I was delighted when Mr. L—— got up, and told us he would shew us the way to the school buildings.

The cloisters, as we passed through them, presented a curious and amusing sight. Scattered in small groups in every direction, parents were to be seen discussing the school and its merits, in connection with their sons, whom they had brought down, and were now awaiting outside the examination room. The noise was great; all appeared to be speaking at once, and at the tops of their voices. All having one anxiety in common, strangers conversed freely with strangers. Here an anxious mother was to be seen, doing her utmost to hook her son on to somebody else's son, in the hope that they might "chum" together. There was to be seen a boy being praised for having taken a good place. In another direction a father and son were to be seen, walking in perfect silence, and at a brisk pace towards the station. The expression of bitter disappointment upon the faces of each told unmistakably what had occurred.

On entering the big school we were filed off to different examiners. I was told to sit down on a form made in the shape of a horse-shoe, and called by that name, and await my turn. I happened to be close to the master, and could thus easily overhear the examination as it proceeded.

I remember one little boy—he was not above three feet nine inches—who was very amusing; he had a cunning twinkle in his eye, and appeared

to have the very greatest confidence in himself. Among the questions asked him was this one:

"What does '*μικρος*'* mean?"

The boy thought for some time, fixing his eyes, first on the ground, then on the ceiling, then somewhere else, but it appeared to "stump" him.

"Come," said the master, by way of helping him a little, "it is a very easy word, you have read a little Greek have you not?"

"Yes, sir," he answered, "but forget what this word means."

"Well," answered the master, "it means what you are."

A bright thought at once seemed to strike him, and with a smile we all caught, he answered "Ah, *I know* what you mean, you want me to say foolish, but" he added, with great emphasis, "*I shant!*"

The examination over, we were told we might return to our respective houses and do whatever we pleased. I returned to my house, and unpacked my trunk, with the assistance of "Mary Anne," who shewed me where my things were to be put; and gave me many useful hints. Mary Anne was quite an institution, she was matron, housemaid, parlour-maid, and I know not what else besides; she was a strong, red-faced woman, with a temper easily and often aroused by the boys, but she could well take care of herself; woe to the boy whom she caught in her clutches, when in a passion!

By the time my trunk was unpacked it was nearly tea-time. I went downstairs into the long-room, where we had our meals, and prepared our work, etc., and sat down by the fire. Presently two old boys came in, "Hilloa," they exclaimed, "who have we here, a new smug? What's your name?" but before I could answer, my chair was pulled from under me, and

I found myself rolling on the floor. Remembering my resolution to take everything in good part, I got up and resumed my seat, laughing. "Oh, you like it, do you? Well, you can go down again," and, for the second time, I was landed upon the floor. "Your name is B——, is it? Well, don't be festive." I was now told to give a full account of myself, my form, age, where I lived, where I had been at school, etc., etc. It is the rule for a new boy to furnish at once any information concerning himself that may be required, but by no means may he ask any in return.

"By Jove! this fellow is festive, he is actually going to sit down to tea without leave."

"Don't you know that you must ask my leave before you do that?"

I replied that I did not know it, and that I should not do it again, whereupon I was immediately told to "cock up,"—I was shewn how—and I received such a kick. In "cocking up," you bend over, with your back facing the boy who is to administer the punishment, and with your hands resting upon your knees, just within convenient reach of his foot.

Prayers were read at nine o'clock, after which we went up to our bedrooms. I had been placed in a room with two other boys, both much older than myself. One of them subsequently became my fag-master, the other died that quarter.

I got into bed as quickly as possible, thankful that the day was over. I began to think over all that had happened, and to wonder what sort of fellows my two companions were who meanwhile were talking over their holidays.

Presently I was told to sing a song, and to be sharp about it. All orders must be sharply obeyed, or else a "cocking up." A hair brush, whizzing by my head, reminded me that I was not sharp enough, so I quickly

**μικρος*—small.

began "John Peel." This appeared to please them, for they began to talk to me afterwards, as if I were an old boy. This was a great honour, and I liked it much, it revived my spirits

considerably. Tired and weary, I was at last allowed to go to sleep, and end the longest day I had ever spent.

(To be continued.)

THE TEACHER AS A MOULDER OF CHARACTER.

BY PROF. J. E. WELLS, M.A., CANADIAN LITERARY INSTITUTE, WOODSTOCK.

(Continued from page 433.)

I SHALL not venture here upon any discussion of the vexed questions about school and college *curricula*. I shall not attempt to decide whether mathematics, or classics, or metaphysics, or the so-called natural sciences, constitutes the best instrument in the hands of the intelligent teacher for accomplishing the great end he has in view, the development of thinking power. Each has its place and its sphere which cannot be filled by another, though there is doubtless much room for discussion as to the relative amount of time and strength to be given to each. But after all I cannot but think that more depends upon the skill and insight of the instructor than upon the tools he uses. If he but knows how to place himself *en rapport* with the mind of his pupil, and constantly to stimulate that mind to independent effort, to lead it on step by step to victory, whether in the solution of some intricate problem, or the mastery of some uncomprehended thought or argument, or the disentangling of some complicated sentence, or the deduction of some well grounded law from a carefully analyzed array of facts, the result is substantially the same.

Nor do I deem it my province here to attempt to estimate the true value

of the system of examinations so much in vogue just now. Our pupils are continually "reading up," "cramming," for this, that, or the other examination. The complaint is often made by those who take broader views of the true office of the teacher, that under present circumstances he has no chance to make his work what he believes it should be—the study and application of the science of mind culture. He has no alternative. He is caught by the current and must either quit the profession or degrade it into a mere drilling of boys and girls, in the shortest possible time, into the best possible state of preparation to answer any question which the ingenuity of an examiner may invent upon a given subject, or text-book. That there has been and still is much ground for such complaints I am well aware, both from observation and experience. But should the system of written examinations be done away with it is difficult to say what could be put in their place, as tests of proficiency, or standards for classification and promotion.

Nor am I by any means convinced that the fault is in the system itself. Is it not rather in the way in which it is worked? Everything depends, as it seems to me, upon the kind of

examination, the nature of the questions asked, and the mode of estimating the relative values of answers. Is it not quite possible to frame question papers and to assign values to answers, so as to make them the very best helps in the true work of education? I believe it is, and, if my observation is not greatly at fault, great progress has of late been made by our public examiners in this very direction. Much, nevertheless, remains to be done before those examinations will wholly cease to put a premium upon rote work and become adequate tests of the manner and extent of the independent thought-power which the student has been taught to bring to bear upon the subject in hand.

It may be said that this strain of remark would seem to regard the process of learning as of more value than the result—or in other words, culture, or discipline, as of more worth than learning. I fear I shall have to plead guilty to the indictment, old-fashioned as my view may appear. We have pretty high authority for believing what the most powerful and most learned minds have always felt most keenly, that the greatest sum of human knowledge is infinitely small beside the towering mountains of our ignorance—that the little pebbles of science we collect so laboriously and prize so highly, are all gathered on a narrow strand bordering the illimitable ocean of a GREAT UNKNOWN. In view of the vast sum of things veiled beyond his sight and reach in vast, impenetrable gloom, the wisest philosopher is but

“An infant crying in the night ;
An infant crying for the light ;
And with no language but a cry.”

“We know in part,” “We see in a mirror, dimly.” But, on the other hand, we can scarcely doubt that the mental power gained in the earnest pursuit of this imperfect and fractional

knowledge will endure. This seems essential to any conception we can form of the preservation of the personal identity in another stage of being. But it will amply suffice for my purpose to take lower ground, and to point out that the teacher who has trained a young man, or young woman, to habits of clear, calm, unprejudiced, independent thought, is a benefactor, not only to the individual, but to society. It is something to have raised, if, but by a hair's breadth, the level of the average intelligence of one's country. It is something, in this age of scientific and religious bigotry, and of purblind party spirit, to have sent forth into the heat of conflict even one cool, unprejudiced, yet earnest seeker after truth. But this is carrying us across the line to the other sub-division of the question. When we come to speak of the mental attitude in regard to truth, we are insensibly stepping over to the question of moral habits.

I shall not stay to argue the question whether a teacher has anything to do with the moral culture and habits of his pupils. He had very much indeed to do with them, whether he will or no. The whole mental nature is a unit, and one can no more operate day by day upon its intellectual side without affecting in one way or another its moral side than he can forge a malleable metal without changing its shape or density. I do not argue that the teacher should deem it his duty to deliver stated lectures or to introduce text-books on morals, but I do earnestly contend that, if he has a due sense of the responsibilities of his profession, he will be on the watch for the thousand and one opportunities which are constantly presenting themselves in the incidents of the daily school life, to strengthen good impulses, to correct bad habits, and to develop moral thoughtfulness. How often it is in his power, for ex-

ample, by putting some simple question in regard to the right and wrong, even of apparently trivial acts, or by leading the child blinded by passion or prejudice, or even at a loss as to the duty he is anxious to perform, to "put himself in his fellow's place," to cultivate the habit of moral reflection, and of applying the spirit of the glorious golden rule to feeling and conduct. This is the best and most practical kind of moral culture; and it often has seemed to me that moral culture is one of the great wants of society. Injustice and wrong in the ordinary relations of life are probably oftener the result of the want of such culture than of conscious lack of principle, or intentional selfishness and dishonesty. How many do we meet in our daily intercourse with those about us, whom we must believe to be sincerely anxious to do right and to be useful, who yet fall sadly short of any high standard of character or conduct, simply because they have not formed the habit, or acquired the power, of putting themselves in another's place. We do not doubt that the man whose heart is right, but whose life, from defects of training, or faults of disposition, may be sadly crooked and inconsistent, stands nevertheless on an immeasurably higher plane than his neighbour whose life, by reason of different constitutional or educational influences, may be comparatively free from gross irregularities, but whose heart is dead to all the best and noblest impulses. The highest moral law demands imperatively the right feelings and motives. But what a pity that when these primary conditions of a symmetrical character and a noble life are present, this character and life should so often be sadly marred in their development for want of the secondary.

Moral culture is a process which, like all other educational processes, must mainly be performed by the in-

dividual upon himself. But in this, as in other cases, the young need, not only "line upon line, and precept upon precept," but illustration upon illustration, to teach them how to carry on the process. The first and indispensable condition of all moral excellence is a habit of conscientiousness. And who has such opportunities as the teacher, for cultivating this habit in his pupils? By judiciously and unostentatiously instilling into their minds, both by precept and example, as occasion offers, that the one great question to ask oneself first of all, and always, before deciding upon any doubtful course of conduct should be, not Is it expedient, or customary, or profitable, or pleasant, or easy, or fashionable? but Is it RIGHT? until the habit is too firmly rooted to be eradicated, he may be every day laying the corner stone of a noble superstructure of character.

Let me give a single illustration of what seems to me a very common and glaring want of moral culture, and of the way in which a judicious teacher may help to impart it. I will take the quality of truthfulness. The expression, "love of truth," is an ambiguous phrase. It may mean the characteristic of a truth-seeker, or of a truth-speaker. I had intended to say a few words in regard to it in the first of these senses, and to attempt to shew how comparatively easy as well as noble a thing it is for the teacher to develop such a quality in the young minds with which he is in daily contact, leading them to detect and to aim at rising above every warping and obstructive influence from within himself, as well as to patiently surmount every obstacle from without. But the length to which this paper is growing warns me to confine my illustration to the love of truth as essential to truth-speaking. I think it is Froude who has remarked that it will generally be found in the history of nations

and of individuals, that those who are afraid to tell a lie are not afraid of anything else. Certainly there are few nobler traits in human character than a conscientious regard to truth in speech, and no meaner, baser vice than falsehood. But every one who has had much to do with the average boy and girl—shall I add, and with the average man and woman?—knows that strict truthfulness is a virtue more rare than easy of attainment in the world where temptations to its opposite do lamentably abound. Of course I do not mean by truthfulness so merely negative a thing as simply abstinence from outspoken falsehood. The man or the woman, the boy or the girl, who can tell a deliberate, barefaced lie, is beyond culture and beneath contempt. It is not such a case I am considering. By the cultivation of truthfulness I mean the cultivation of feelings and habits that will lead us to shun and to abhor every kind of equivocation, in word, or act, or gesture, or even in silence. The essence of falsehood is deception, and all intentional deception is falsehood. A foul untruth may be told by a nod, or a glance, or by refraining from either, or by a thousand other little artifices, with which we are all too familiar. And I am by no means sure that this kind of lying does not deserve the palm for meanness. I am not sure but there is something less utterly opposed to nobleness in a bold, daring, uncompromising and unmitigated falsehood, than in the cowardly and contemptible equivocation which skulks behind some petty ambiguity of speech, and sneaks along in the shadow of words and phrases, keeping the word of truth to the ear but breaking it to the sense. This way of saving conscience is but covering a plague spot with a coat of varnish, or putting a thin plaster of self-deception over a moral gangrene. Need I prove that the use of such equivoca-

tion is in many cases owing simply to the lack of moral culture—simply to the fact that the eye of the understanding has never been trained to discern between good and evil? Who can for a moment doubt that the teacher who is constantly training his pupils to hate the false and love the true is one of the noblest benefactors of his country and his race?

Need I add, in closing, that in order to the teacher's success in all, or any, respectable part of this great work, the process must begin at home. No saucy pupil must have it in his power to say to his preceptor "Physician, heal thyself." Nor will it suffice for the teacher to say to himself, I have not the mental and moral fitness for impressing such mental and moral habits upon my pupils. If he has not, it is time he had such fitness. If every teacher is responsible for the real mental and moral culture of his pupils, and not simply for compelling them to learn by rote certain facts and formulæ, he surely is doubly responsible for his own mental and moral culture. Teachers should ever set before them the aim and determination to make themselves the most intelligent, most high-minded and most refined men and women in the land. That our power to shape our own characters is real, and almost unlimited, few will care to deny. Even John Stuart Mill, in his review of Sir William Hamilton, passed from his able advocacy of the baldest necessitarianism, to a chapter in which the existence of the power to modify one's own character is boldly contended for. True, in so doing, he may have to vault over a logical chasm, whose breadth and depth may well appal the ordinary reasoner. But this very fact is but an additional tribute to the truth as revealed in consciousness.

If, then, we all are entrusted, to an extent, at least, which makes responsibility real and awful, with a

power to mould our own characters, and to make ourselves what we wish to become, and if any outside inducement is needed, to stimulate the public school teachers of Ontario, to avail themselves to the utmost of this inherent power, they need not go for such inducement beyond the consideration that theirs is one of the highest of all callings, inasmuch as the materials upon which it is theirs to work—human minds—are the noblest and most imperishable of all things, and that with them it rests, in a very large degree, to determine not only what shall be the mental and moral characteristics of a large number of the individuals of the coming generation, but also through these individuals the distinctive features of the

typical Canadian of fifty or a hundred years hence. The Canadian national character is now in process of formation. We all wish that it may become a synonym for all that is intelligent and energetic in mentality, and all that is manly and straightforward in morality. To what extent this wish is to be realized depends more probably upon the public school teachers of the country, than upon any other human agency—that of mothers alone excepted. It has been truly said that “mothers and school teachers sow the seeds of nearly all the moral good and evil in the world.” Let the school teachers of Ontario sow only good seed, and coming generations shall rejoice in an abundant harvest of intelligence and virtue.

SIR WALTER SCOTT'S MATURER POEMS.

SCOTT'S genius flowered late. “Cadyow Castle,” the first of his poems, I think, that has indisputable genius plainly stamped on its terse and fiery lines, was composed in 1802, when he was already thirty-one years of age. It was in the same year that he wrote the first canto of his first great romance in verse, “The Lay of the Last Minstrel,” a poem which did not appear till 1805, when he was thirty-four. The first canto (not including the framework, of which the aged harper is the principal figure) was written in the lodgings to which he was confined for a fortnight in 1802, by a kick received from a horse on Portobello sands, during a charge of the Volunteer Cavalry, in which Scott was cornet. The poem was originally intended to be included in the “Border Minstrelsy,” as one of the

studies in the antique style, but soon outgrew the limits of such a study both in length and in the freedom of its manner. Both the poorest and the best part of “The Lay” were in a special manner due to Lady Dalkeith (afterward Duchess of Buccleugh), who suggested it, and in whose honour the poem was written. It was she who requested Scott to write a poem on the legend of the goblin page, Gilpin Horner, and this Scott attempted, and so far as the goblin himself was concerned, conspicuously failed. He himself clearly saw that the story of this unmanageable imp was both confused and uninteresting, and that in fact he had to extricate himself from the original groundwork of the tale, as from a regular literary scrape, in the best way he could. In a letter to Miss Seward,

Scott says, "At length the story appeared so uncouth that I was fain to put it into the mouth of my old minstrel, lest the nature of it should be misunderstood, and I should be suspected of setting up a new school of poetry, instead of a feeble attempt to imitate the old. In the process of the romance, the page, intended to be a principal person in the work, contrived (from the baseness of his natural propensities, I suppose) to slink down-stairs into the kitchen, and now he must e'en abide there."^{*} And I venture to say that no reader of the poem ever has distinctly understood what the goblin page did or did not do, what it was that was "lost" throughout the poem and "found" at the conclusion, what was the object of his personating the young heir of the house of Scott, and whether or not that object was answered—what use, if any, the magic book of Michael Scott was to the Lady of Branksome, or whether it was only harm to her; and I doubt moreover, whether any one ever cared an iota what answer, or whether any answer, might be given to any of these questions. All this, as Scott himself clearly perceived, was left confused and not simply vague. The goblin imp had been more certainly an imp of mischief to him than even to his boyish ancestor. But if Lady Dalkeith suggested the poorest part of the poem, she certainly inspired its best part. Scott says, as we have seen, that he brought in the aged harper to save himself from the imputation of "setting up a new school of poetry" instead of humbly imitating an old school. But I think that the chivalrous wish to do honour to Lady Dalkeith, both as a personal friend and as the wife of his "chief," as he always called the head of the house of Scott, had more to do with the introduction of the aged harper

than the wish to guard himself against the imputation of attempting a new poetic style. He clearly intended the duchess of "The Lay" to represent the countess for whom he wrote it, and the aged harper, with his reverence and gratitude and self-distrust, was only the disguise in which he felt that he could best pour out his loyalty, and the romantic devotion with which both Lord and Lady Dalkeith, but especially the latter, had inspired him. It was certainly this beautiful framework which assured the immediate success and permanent charm of the poem; and the immediate success was for that day something marvellous. The magnificent quarto edition of 750 copies was soon exhausted, and an octavo edition of 1,500 copies was sold out within the year. In the following year, two editions, containing together 4,250 copies were disposed of, and before twenty-five years had elapsed, that is before 1830, 44,000 copies of the poem had been bought by the public in this country, taking account of the legitimate trade alone. Scott gained in all by "The Lay" £769, an unprecedented sum in those times for an author to obtain from any poem. Little more than half a century before, Johnson received but fifteen guineas for his stately poem on "The Vanity of Human Wishes," and but ten guineas for his "London." I do not say that Scott's poem had not much more in it of true poetic fire, though Scott himself, I believe, preferred these poems of Johnson's to anything that he himself ever wrote. But the disproportion in the reward was certainly enormous, and yet what Scott gained by his "Lay" was of course much less than he gained by any of his subsequent poems of equal, or anything like equal length. Thus, for "Marmion," he received 1,000 guineas, long before the poem was published, and for *one-half* of the copyright of "The Lord of the Isles"^{*}

* Lockhart's "Life of Scott," ii. 217.

Constable paid Scott 1,500 guineas. If we ask ourselves to what this vast popularity of Scott's poems, and especially of the earlier of them (for, as often happens, he was better remunerated for his later and much inferior poems than for his earlier and more brilliant productions) is due, I think the answer must be, for the most part, the high romantic glow and extraordinary romantic simplicity of the poetical elements they contained. Take the old harper of "The Lay," a figure which arrested the attention of Pitt during even that last most anxious year of his anxious life, the year of Ulm and Austerlitz. The lines in which Scott describes the old man's embarrassment when first urged to play, produced on Pitt, according to his own account, "an effect which I might have expected in painting, but could never have fancied capable of being given in poetry."^{*}

Everyone knows the lines to which Pitt refers :

"The humble boon was soon obtain'd ;
The aged minstrel audience gain'd.
But, when he reach'd the room of state,
Where she with all her ladies sate,
Perchance he wish'd his boon denied ;
For, when to tune the harp he tried,
His trembling hand had lost the ease
Which marks security to please ;
And scenes long past of joy and pain,
Came wildering o'er his aged brain—
He tried to tune his harp in vain !
The pitying Duchess praised its chime,
And gave him heart and gave him time,
Till every string's accord'ing glee
Was blended into harmony.
And then, he said, he would full fain
He could recall an ancient strain
He never thought to sing again.
It was not framed for village churls,
But for high dames and mighty earls ;
He play'd it to King Charles the Good,
When he kept Court at Holyrood ;
And much he wish'd, yet fear'd to try,
The long-forgotten melody.
Amid the strings his fingers play'd,
And an uncertain warbling made,
And oft he shook his hoary head.
But when he caught the measure wild,
The old man raised his face, and smiled,

And lighten'd up his faded eye,
With all a poet's ecstasy !
In varying cadence, soft or strong,
He swept the sounding chords along ;
The present scene, the future lot,
His toils, his wants, were all forgot ;
Cold diffidence and age's frost
In the full tide of song were lost ;
Each blank in faithless memory void
The poet's glowing thought supplied ;
And, while his heart responsive rung,
'Twas thus the latest minstrel sung.

Here paused the harp ; and with its swell
The master's fire and courage fell ;
Dejectedly and low he bow'd,
And gazing timid on the crowd,
He seem'd to seek in every eye
If they approved his minstrelsy ;
And, diffident of present praise,
Somewhat he spoke of former days,
And how old age, and wandering long,
Had done his hand and harp some wrong."^{*}

These lines hardly illustrate, I think, the particular form of Mr. Pitt's criticism, for a quick succession of fine shades of feeling of this kind could never have been delineated in a painting, or indeed in a series of paintings, at all, while they are so given in the poem. But the praise itself, if not its exact form, is amply deserved. The singular depth of the romantic glow in this passage, and its equally singular simplicity, a simplicity which makes it intelligible to every one, are conspicuous to every reader. It is not what is called classical poetry, for there is no severe outline, no sculptured completeness and repose, no satisfying wholeness of effect to the eye of the mind, no embodiment of a great action. The poet gives us a breath, a ripple of alternating fear and hope in the heart of an old man, and that is all. He catches an emotion that had its roots deep in the past, and that is striving onward toward something in the future ; he traces the wistfulness and self-distrust with which age seeks to recover the feelings of youth, the delight with which it greets them when they come, the hesitation and diffidence with which it recalls them as they pass away, and

^{*} Lockhart's "Life of Scott," ii. 226.

questions the triumph it has just won—and he paints all this without subtlety, without complexity, but with a swiftness such as few poets ever surpassed. Generally, however, Scott prefers action itself for his subject, to any feeling, however active in its bent. The cases in which he makes a study of any mood of feeling, as he does of this harper's feeling, are comparatively rare. Deloraine's night-ride to Melrose is a good deal more in Scott's ordinary way than his study of the old harper's wistful mood. But whatever his subject, his treatment of it is the same. His lines are always strongly drawn, his handling is always simple, and his subject always romantic. But though romantic, it is simple almost to bareness, one of the great causes both of his popularity and of that deficiency in his poetry of which so many of his admirers become conscious when they compare him with other and richer poets. Scott used to say that in poetry Byron "bet" him; and no doubt that in which chiefly as a poet he "bet" him was in the variety, the richness, the lustre of his effects. A certain ruggedness and bareness was of the essence of Scott's idealism and romance. It was so in relation to scenery. He told Washington Irving that he loved the very nakedness of the Border country. "It has something," he said, "bold and stern and solitary about it. When I have been for some time in the rich scenery about Edinburgh, which is like ornamented garden-land, I begin to wish myself back again among my honest gray hills, and if I did not see the heather at least once a year *I think I should die.*"* Now the bareness which Scott so loved in his native scenery, there is in all his romantic elements of feeling. It is while he is bold and stern that he is at his highest ideal point. Directly he begins to attempt rich or pretty subjects, as in

parts of "The Lady of the Lake," and a good deal of "The Lord of the Isles," and still more in "The Bridal of Triermain," his charm disappears. It is in painting those moods and exploits, in relation to which Scott shares most completely the feelings of ordinary men, but experiences them with far greater strength and purity than ordinary men, that he triumphs as a poet. Mr. Lockhart tells us that some of Scott's senses were decidedly "blunt," and one seems to recognize this in the simplicity of his romantic effects. "It is a fact," he says, "which some philosophers may think worth setting down, that Scott's organization, as to more than one of the senses, was the reverse of exquisite. He had very little of what musicians call an ear; his smell was hardly more delicate. I have seen him stare about, quite unconscious of the cause, when his whole company betrayed their uneasiness at the approach of an over-kept haunch of venison; and neither by the nose nor by the palate could he distinguish corked wine from sound. He could never tell Madeira from sherry, nay, an Oriental friend having sent him a butt of *sheeraz*, when he remembered the circumstance some time afterward and called for a bottle to have Sir John Malcolm's opinion of its quality, it turned out that his butler, mistaking the label, had already served up half the bin as *sherry*. Port he considered as physisic . . . in truth he liked no wines except sparkling champagne and claret; but even as to the last he was no connoisseur, and sincerely preferred a tumbler of whiskey-toddy to the most precious 'liquid-ruby' that ever flowed in the cup of a prince."*

However, Scott's eye was very keen: "*It was commonly him,*" as his little son once said, "*that saw the hare sitting.*" And his perception of colour was very delicate as well as his

* Lockhart's "Life of Scott," v. 248.

* Lockhart's "Life of Scott," v. 338.

mere sight. As Mr. Ruskin has pointed out, his landscape painting is almost all done by the lucid use of colour. Nevertheless, this bluntness of organization in relation to the less important senses, no doubt contributed something to the singleness and simplicity of the deeper and more vital of Scott's romantic impressions; at least there is good reason to suppose that delicate and complicated susceptibilities do at least diminish the chance of living a strong and concentrated life—do risk the frittering away of feeling on the mere backwaters of sensations, even if they do not directly tend toward artificial and indirect forms of character. Scott's romance is like his native scenery—bold, bare, and rugged, with a swift deep stream of strong, pure feeling running through it. There is plenty of colour in his pictures, as there is on the Scotch hills when the heather is out. And so too there is plenty of intensity in his romantic situations; but it is the intensity of simple, natural, unsophisticated, hardy, and manly characters. But as for subtleties and fine shades of feeling in his poems, or anything like the manifold harmonies of the richer arts, they are not to be found, or, if such complicated shading is to be found—and it is perhaps attempted in some faint measure in "The Bridal of Triermain," the poem in which Scott tried to pass himself off for Erskine—it is only at the expense of the higher qualities of his romantic poetry that even in this small measure it is supplied. Again, there is no rich music in his verse. It is its rapid onset, its hurrying strength, which so fixes it in the mind.

It was not till 1808, three years after the publication of "The Lay," that "Marmion," Scott's greatest poem, was published. But I may as well say what seems necessary of that and his other poems, while I am on the subject of his poetry. "Marmion"

has all the advantage over "The Lay of the Last Minstrel" that a coherent story, told with force and fullness, and concerned with the same class of subjects as "The Lay," must have over a confused and ill-managed legend, the only original purpose of which was to serve as the opportunity for a picture of Border life and strife. Scott's poems have sometimes been depreciated as mere *noveauvelles* in verse, and I think that some of them may be more or less liable to this criticism. For instance, "The Lady of the Lake," with the exception of two or three brilliant passages, has always seemed to be more of a versified *noveauvelle*—without the higher and broader characteristics of Scott's prose novels—than of a poem. I suppose what one expects from a poem as distinguished from a romance—even though the poem incorporates a story—is that it should not rest for its chief interest on the mere development of the story; but rather that the narrative should be quite subordinate to that insight into the deeper side of life and manners, in expressing which poetry has so great an advantage over prose. Of "The Lay" and "Marmion" this is true; less true of "The Lady of the Lake," and still less of "Rokeby," or "The Lord of the Isles," and this is why "The Lay" and "Marmion" seem so much superior as poems to the others. They lean less on the interest of mere incident, more on that of romantic feeling and the great social and historic features of the day. "Marmion" was composed in great part in the saddle, and the stir of a charge of cavalry seems to be at the very core of it. "For myself," said Scott, writing to a lady correspondent at a time when he was in active service as a volunteer, "I must own that to one who has, like myself, *la tête un peu exaltée*, the pomp and circumstance of war gives, for a time, a very poignant and pleas-

ing sensation."* And you feel this all through "Marmion" even more than in "The Lay." Mr. Darwin would probably say that Auld Wat of Harden had about as much responsibility for "Marmion" as Sir Walter himself. "You will expect," he wrote to the same lady, who was personally unknown to him at that time, "to see a person who had dedicated himself to literary pursuits, and you will find me a rattle-skulled, half-lawyer, half-sportsman, through whose head a regiment of horse has been exercising since he was five years old."† And what Scott himself felt in relation to the martial elements of his poetry, soldiers in the field felt with equal force. "In the course of the day, when 'The Lady of the Lake' first reached Sir Adam Fergusson, he was posted with his company on a point of ground exposed to the enemy's artillery, somewhere no doubt on the lines of Torres Vedras. The men were ordered to lie prostrate on the ground; while they kept that attitude, the captain, kneeling at the head, read aloud the description of the battle in Canto VI., and the listening soldiers only interrupted him by a joyous huzza when the French shot struck the bank close above them."‡ It is not often that martial poetry has been put to such a test; but we can well understand with what rapture a Scotch force lying on the ground to shelter from the French fire, would enter into such passages as the following:

" Their light-armed archers far and near
Survey'd the tangled ground,
Their centre ranks, with pike and spear,
A twilight forest frown'd,

* Lockhart's "Life of Scott," ii. 137.

† Ibid. ii. 259. ; Ibid. iii. 327.

Their barbèd horsemen, in the rear,
The stern battalia crown'd.
No cymbal clash'd, no clarion rang,
Still were the pipe and drum:
Save heavy tread, and armour's clang,
The sullen march was dumb.
There breathed no wind their crests to
shake,
Or wave their flags abroad;
Scarce the frail aspen seem'd to quake,
That shadow'd o'er their road.
Their vanward scouts no tidings bring,
Can rouse no lurking foe,
Nor spy a trace of living thing
Save when they stirr'd the roe;
The host moves like a deep-sea wave,
Where rise no rocks its power to brave,
High-swelling, dark, and slow.
The lake is pass'd and now they gain
A narrow and a broken plain,
Before the Trosach's rugged jaws,
And hear the horse and spearman pause,
While to explore the dangerous glen,
Dive through the pass the archer-men.

" At once there rose so wild a yell
Within that dark and narrow dell,
As all the fiends from Heaven that fell
Had peal'd the banner-cry of Hell!
Forth from the pass, in tumult driven,
Like chaff before the wind of heaven,
The archery appear;
For life! for life! their plight they ply,
And shriek, and shout, and battle-cry,
And plaids and bonnets waving high,
And broad-swords flashing to the sky,
Are maddening in the rear.
Onward they drive, in dreadful race,
Pursuers and pursued;
Before that tide of flight and chase,
How shall it keep its rooted place,
The spearman's twilight wood?
'Down, down,' cried Mar, 'your lances
down,
Bear back both friend and foe!
Like reeds before the tempest's frown,
That serried grove of lances brown
At once lay levell'd low;
And, closely shouldering side to side,
The bristling ranks the onset bide—
'We'll quell the savage mountaineer,
As their Tinchel cows the game!
They came as fleet as forest deer,
We'll drive them back as tame.'

(From Hutton's *Scott, in Morley's Men of Letters Series*.—Conclusion in our next issue.)

THE PHYSICAL EDUCATION OF GIRLS—II.

(Continued from page 438.)

EXERCISE.

HAVING cleared the way, by first reviewing the question of dress, for what may be called the more positive part of our subject, let us now consider exercise, and see whether the rights of girl children to a free development of their faculties are not here also ignored.

Little girls of the working classes are exercised often severely enough. They are less likely to be dragged down by the weight of their skirts; the danger is rather that their garments are both too few for warmth, and of unsuitable materials. They are less often cramped by stiff stays than girls of the richer classes, but when they are put into stays, the consequences are in some respects even more disastrous.

Little girls of the working classes, if they are not dragged down by heavy skirts, are very commonly weighed down by heavy babies. The practice either of making an older child act as nurse to her little brothers and sisters, or of sending out very young or slight, delicate girls into service as nursemaids, as the lightest and most suitable work for them, is the most frequent cause of spinal curvature and its long train of evils in the children of the poor. Boys, when they are made to nurse the baby, and this they have to do as a rule only when there are no sisters old enough to do it—the work is never evenly divided among the boys and girls of a family—are both a little stronger to bear the burden, and less conscientious about their little charges than

girls are. They run away, and cannot be made to give up their lives to the service of the baby as girls often have to do, a girl sometimes nursing through a large family of brothers and sisters—at least this was so before the days of School-boards—now there is less chance of it—and it is one of the most useful services which School-boards are rendering to the community, that they are delivering little girls from the thralldom of the baby, and removing one of the most prolific causes of crooked backs in girls. It may be that they are substituting others; but of this more anon.

It has long been known that, if you overload a young horse or other beast of burden, its back bends, and its future serviceableness is impaired; and yet I have known honest, hardworking English mothers who hardly ever took up their babies except to suckle them, but left the entire nursing of them to the eldest little girl of the family, to her physical injury and to the neglect of her schooling. It used to be no rare thing to find the eldest girl in fairly prosperous working men's families unable to read or write like the rest, because she had only had two or three quarters' schooling, having been kept at home to mind the successive babies, of which there was always one from the time she could walk alone until she was sent out into service to earn her own living. Truly when we reflect that nothing short of compulsory education has sufficed to lift from the shoulders of little girls so heavy a burden, it may be said that "Evil is wrought by want of thought as well as by want of heart;" and when

we remember that it was their mothers who placed it there, what more convincing proof need we ask of the advisability, nay the absolute necessity, of imparting to women the largest possible measure of useful knowledge, seeing that they contribute so materially by wise household government, or the contrary, to make or to mar the health and usefulness of the rising generation, apart altogether from their own inalienable right to a share in the intellectual banquet of life?

If there happens to be no baby in the family, little girls of the working class are still expected to help actively in household work, at times when boys are generally sent out to amuse themselves, in order, as the mothers often express it, "to get them out of the way." Some kinds of household activity, such as cleaning rooms and boots, washing up, running errands, etc., afford capital exercise to both boys and girls, but it frequently happens that most of the fetching of water and coals is left to the girl, while the stronger boy is playing in the streets. Again, the girl when she comes home from school, is often set down to needlework, a useful and necessary occupation I grant, but one which is monotonous in the extreme, wearisome to active little brains, almost always pursued in a stooping posture, and which, as a physical exercise, to use the words of an excellent and judicious teacher of girls, "may almost be pronounced bad in its very nature." It calls into action a limited number of muscles of the hand and arm only (and it may be remarked that those muscles which are active in sewing get plenty of exercise during school hours), while it hardly calls forth any activity in the muscles of the thumb, which good physical education ought to develop to the utmost—the thumb being that part of the hand which is most essentially human in its characteristics. Knit-

ting, especially in the German way, is far superior to sewing as a manual exercise; and there is much to be said in support of the proposal made by a lady member of one of our provincial School-boards, that boys should be taught to knit as well as girls, as a good and useful manual exercise.

Little girls of the middle and upper classes, whose parents do not look to their labour as a right which is to take precedence of the claims of education, exercise and play, are often, strange to say, at a greater disadvantage than even their poorer sisters, in regard to the means afforded them for physical education and development. They are, as already stated, most unsuitably dressed. Their education is neglected, on the plea of their brothers' greater needs, if the family purse is small, they are not allowed, for fear of becoming unfeminine, to make up for the want of good teaching by living in the open air and growing strong of limb, active, observant, enduring, and fearless, or they are immured in school-rooms for many hours of the day, tormented with accomplishments which they seldom accomplish, and, on pretence of pushing them forward intellectually, and making them the equals of their brothers, they are taught the same lessons without being given the same correctives of over-activity of brain, in the play which their brothers enjoy when they rush out of school wild with exuberance of spirits, and eager for fun.

The danger of intellectual forcing of girls is great in our own day, awaking as we are to the educational wants of women. High Schools are growing up in all our large towns for middle-class girls, and girls of the working classes are being slowly but surely gathered into Board Schools. There is not much danger that girls' minds will be too well stored, although it is a startling fact that conscientiousness in doing their lessons well is apt

to develop uncomfortably early in little girls as compared with little boys. We need not fear that women will become too learned, but we have reason to fear that their intellectual training will be pushed too far at an early age, to the detriment of their physical, and especially of their muscular, development.

Teachers are not all to blame for this. There is in them a natural leaning to exaggerate the importance of the subjects they individually teach, which, however, makes them all the better teachers, if it is counterbalanced by similar feeling in all the other teachers in the school, and greater breadth of view in the head mistress. Too much is demanded of teachers and schoolmistresses by parents and guardians. A girl is expected to have made too great and sustained intellectual efforts by the time she leaves school, and school life is regarded far too much as a time for laying in a stock of intellectual provision for the whole of life. With this feeling abroad, teachers have not fair play. They are driven on by competition to force their pupils' brains; and if they attempt to introduce reforms—to give, for instance, more time and attention to gymnastic exercises for girls—the parents are very apt to tell them that they pay their money for education and not for gymnastics.

At least a third of a school-girl's life ought to be spent in sleep. Many girls require even more than eight hours' sleep, and it is poor economy of time to stint them of it when this is so. Of the fifteen or sixteen working hours of the day, not more than one-third should be spent in preparing lessons and in class work throughout childhood, and the little girls of from seven to ten or eleven years of age ought to have even shorter hours of work. The remaining hours of the day ought to be devoted to taking

food, and to training the body. The latter, in the natural healthful conditions of country life, would consist of long walks, to which it is easy to bring even young children by regular practice, rambles in search of natural history specimens, climbing hills or mountains, swimming, rowing, skating, riding, lawn tennis, and one or two other really useful modern games, according to the time of year, while for wet days there would be dancing in-doors, battledore and shuttlecock, the old-fashioned games of fives, and of cup and ball, which make the hand so nimble and so obedient to the will, and, for all weathers and seasons, looking after and playing with the animals, which go so far to make up the pleasure and usefulness of a country life to children of both sexes. Several hours a day spent in active and varied exercise in country air, with a little sensible supervision and steady discountenancing by the mother of all listlessness and moping, would make every girl strong, supple, surefooted, able to walk and to run, quick and steady of hand and eye, clear-headed, large-brained, ready, after passing safely through the critical period which leads from childhood to adolescence, to throw herself vigorously into intellectual work, and capable of learning in a year, at sixteen or seventeen years of age, as much as has been compressed into the whole school life of a young girl of average education. There are few kinds of knowledge which cannot be better taken in by the rapidly unfolding brain of the girl entering upon young womanhood than by the brain of the child; and happily even languages, which are so easily acquired by children, need involve no strain of the immature intellectual faculties, as it is merely the imitative part which it is essential to teach in early childhood.

(To be continued.)

ARTS DEPARTMENT.

ARCHIBALD MACMURCHY, M.A., MATHEMATICAL EDITOR, C. E. M.

Our correspondents will please bear in mind, that the arranging of the matter for the printer is greatly facilitated when they kindly write out their contributions, intended for insertion, on one side of the paper ONLY, or so that each distinct answer or subject may admit of an easy separation from other matter without the necessity of having it re-written.

SOLUTIONS

By the Proposer, W. G. ELLIS, B.A., Math'l Master, Collegiate Institute, Cobourg.

145. In 1870 a Frenchman in New York proposed to invest \$5000 U. S. currency in the French 6% loan, then being sold in London at 85. Gold being at 110, London exchange 4.87, brokerage in New York $\frac{1}{2}\%$, commission for buying in London $\frac{1}{2}\%$, and London exchange on Paris being 25.43; what per cent. will the investor secure per annum, the *rentes* being payable in gold, exchange on Paris at 5.15, and gold at 115?

$$(5000 - \frac{1}{2}\% \text{ of } 5000) \times \frac{100}{110} \times \frac{100}{4.87} = £931.025$$

= amount of bill on London;

$$(931.025 - \frac{1}{2}\% \text{ of } 931.025) \times 25.43 = .23567.59$$

= amount of bill on Paris;

$$23567.59 \times \frac{100}{85} \times \frac{6}{100} = \text{int. rec'd in France,}$$

$$23567.59 \times \frac{100}{85} \times \frac{6}{100} \times \frac{115}{100} = 371.39$$

= $7\frac{1}{2}\%$ nearly.

146. A Canadian cent is one inch in diameter, $\frac{1}{8}$ of an inch thick, and 100 of them weigh a pound. What is the weight of a mass of the metal from which these cents are made, in the form of a sphere, four inches in diameter?

Let R be the radius of the cent and R' the radius of the sphere; then weight =

$$\frac{\frac{4}{3} \pi R'^3}{\frac{1}{8} \pi R^2} = \frac{\frac{4}{3} \pi 2^3}{\frac{1}{8} \pi (\frac{1}{2})^2} = \frac{\frac{4}{3} \times 8}{\frac{1}{4}} = 426\frac{2}{3} = \text{Number}$$

of cents that can be coined, or weight = $4.26\frac{2}{3}$ lbs.

147. If $x = 4y$, shew that the arithmetic mean of x and y is to the geometric mean as 5 is to 4.

$$x = 4y \therefore x : y :: 4 : 1,$$

$$\text{or } (x-y)^2 : (x+y)^2 :: 3^2 : 5^2,$$

$$\text{or } (x-y)^2 : 4xy :: 9 : 16,$$

$$\text{or } x-y : 2\sqrt{xy} :: 3 : 5;$$

$$\text{but } x-y : x+y :: 3 : 5;$$

$$\therefore \frac{2\sqrt{xy}}{x+y} = \frac{4}{5}, \therefore \frac{x+y}{2} : \sqrt{xy} :: 5 : 4.$$

148. If $\frac{r}{2}a^2 + x^2a^2b + 2b^2$ is the perfect square of a binomial, find x in terms of r .

$$x = 4r.$$

149. Reduce to lowest terms

$$\frac{(x^2 + y^2)^2 - (a^2 - b^2 + c^2)^2}{(x^2 + y^2)(a^2 - b^2 + c^2) + (a^2 - b^2 + c^2)^2 + (x^2 + y^2)^2} \\ = \frac{x^2 + y^2 - a^2 + b^2 - c^2}{x^2 + y^2 - a^2 + b^2 - c^2}.$$

150. Why is it that if any *three* consecutive numbers be multiplied together the product is divisible by 6?

Because one factor at least is divisible by 2 and one by 3.

151. Resolve $m^4 - 4m^2 + 5m^2 - 2m$ into elementary factors, and shew that it is divisible by 12 for all values of m above 2.

$m(m-1)(m-1)(m-2)$. Now, there are three consecutive numbers here as factors; $\therefore 3$ is a divisor, and whether m be odd or even *two* of the factors are divisible each by 2; $\therefore 4$ is also a divisor.

152. Solve $2x^2 - x^2 = 1$.

Transpose x^2 , add -2 and factor

$$x = 1 \text{ or } \frac{1}{2}(-1 \pm \sqrt{-7}).$$

153. Solve

$$27x^3 - \frac{841}{3x^3} + \frac{17}{3} = \frac{232}{3x} - \frac{1}{3x^2} + 5.$$

Multiply both sides by 3, transpose $\frac{841}{x^3}$

and $\frac{1}{x^2}$, add 1 to each side to complete the square

$$x = 2, -\frac{14}{9}, \text{ or } \frac{1}{9}(-2 \pm \sqrt{-266}).$$

154. Two inclined planes are placed so as to have a common vertex. Two weights, one on each plane, are in equilibrium when connected by a cord that passes over this common vertex; shew that the weights are to one another as the lengths of the planes on which they rest.

Let W and W_1 represent the weights and θ and θ_1 the inclination of the plane, also t be the tension of the cord, constant throughout

$$\left. \begin{aligned} t &= W \sin \theta \\ t &= W_1 \sin \theta_1 \end{aligned} \right\} \therefore W \sin \theta = W_1 \sin \theta_1,$$

the sides are as the sines of the angles opposite to them; therefore, &c.

155. Two right cones have the same base and the vertices in the same direction, but they are of different altitudes; find the distance of the centre of gravity of the solid, contained between their two surfaces, from the common base.

Let b = the base, h and h' heights of the greater and less cone respectively, v and v' their volumes.

$$v = \frac{1}{3}bh \text{ and } v' = \frac{1}{3}bh', \text{ space enclosed} = v - v' = \frac{1}{3}bh - \frac{1}{3}bh'.$$

Let x be the distance of the centre of gravity of this enclosed space from base. Centre of gravity of a right cone is $\frac{1}{3}$ of distance along altitude from base;

$$\therefore v \times \frac{1}{3}h = v' \times \frac{1}{3}h' + (v - v')x. \text{ Substitute}$$

$$x = \frac{v \frac{1}{3}h - v' \frac{1}{3}h'}{v - v'} = \frac{\frac{1}{3}bh \times \frac{1}{3}h - \frac{1}{3}bh' \times \frac{1}{3}h'}{\frac{1}{3}bh - \frac{1}{3}bh'}$$

$$= \frac{\frac{1}{3}b(h^2 - h'^2)}{\frac{1}{3}b(h - h')} = \frac{1}{3}(h + h'), \text{ i.e., } \frac{1}{3} \text{ sum of altitudes.}$$

Solutions by the proposer, Prof. EDGAR FRISBY, M.A., Washington.

156. Prove that $\sin 54^\circ - \sin 18^\circ = \frac{1}{2}$.

This can be done by finding the value of each and subtracting $\frac{1}{2}(\sqrt{5} + 1)$ and $\frac{1}{2}(5 - 1)$, but I prefer this:

$$\begin{aligned} \sin 54^\circ - \sin 18^\circ &= 2 \sin 18^\circ \cos 36^\circ \\ &= \frac{\sin 36^\circ \sin 72^\circ}{2 \cos 18^\circ \sin 36^\circ} = \frac{1}{2}. \end{aligned}$$

157. Prove that $x^7 - x$ is always divisible by 42.

$$\begin{aligned} x^7 - x &= x(x^2 - 1)(x^4 + x^2 + 1) \\ &= x(x^2 - 1)(x^2 - 13x^2 + 36 + 14x^2 - 35) \\ &= x(x^2 - 1)(x^2 - 4)(x^2 - 9) + 7x(x^2 - 1)(2x^2 - 5) \\ &= (x - 3)(x - 2)(x - 1)(x)(x + 1)(x + 2)(x + 3) \\ &\quad + 7(x - 1)(x)(x + 1)(2x^2 - 5). \end{aligned}$$

This is divisible by $\underline{7}$ and the other part by $\underline{7} \mid \underline{3} = 42$.

158. If a, β, γ are the distances from the centre of the inscribed circle of a triangle from its angular points, prove that $aa^2 + b\beta^2 + c\gamma^2 = abc$.

$$a = r \operatorname{cosec} \frac{A}{2}, \beta = r \operatorname{cosec} \frac{B}{2}, \gamma = r \operatorname{cosec} \frac{C}{2}$$

$$a = \sqrt{\frac{(s-a)(s-b)(s-c)}{s} \cdot \frac{bc}{(s-b)(s-c)}} = \sqrt{\frac{bc(s-a)}{s}}$$

$$aa^2 = abc \left(\frac{s-a}{s}\right), \quad b\beta^2 = abc \left(\frac{s-b}{s}\right),$$

$$c\gamma^2 = abc \left(\frac{s-c}{s}\right),$$

$$\therefore aa^2 + b\beta^2 + c\gamma^2 = abc \left(\frac{3s - 2s}{s}\right) = abc.$$

159. Having given the radii of the inscribed and circumscribing circles of a triangle and the sum of the sides, find the sides.

$$r = \frac{\Delta}{s}, \quad R = \frac{abc}{4\Delta}, \quad \therefore 4rRs = abc,$$

$$sr^2 = (s-a)(s-b)(s-c)$$

$$= s^2 - (a+b+c)s^2 + (ab+ac+bc)s - abc$$

$$\begin{aligned} &= -s^2 + (ab+ac+bc)s - 4rRs, \\ \therefore r^2 + s^2 + 4Rr &= ab + ac + bc \\ & \qquad \qquad \qquad a + b + c = 2s, \\ \therefore \text{the values of } a, b \text{ and } c &\text{ are contained in} \\ \text{the cubic} \\ x^3 - 2sx + (r^2 + s^2 + 4Rr)x - 4Rrs &= 0. \end{aligned}$$

Solution of 16t by the proposer, D. F. H. WILKINS, B. A., Mathematical Master, High School, Chatham.

16t. If A, B, C be the angles of a plane triangle, prove that

$$\begin{vmatrix} \sin 2A & 0 & \sin 2B & \sin 2C \\ 0 & \sin 2A & \sin 2C & \sin 2B \\ \sin 2C & \sin 2B & 0 & \sin 2A \\ \sin 2B & \sin 2A & \sin 2A & 0 \end{vmatrix}^{\frac{1}{2}}$$

$$= 2 \sin 2A \sin 2B \sin 2C.$$

Expanding the determinant, we have

$$\begin{aligned} &\{ 2 \sin^2 2A \sin^2 2B + 2 \sin^2 2B \sin^2 2C \\ &\quad + 2 \sin^2 2C \sin^2 2A - \sin^4 A - \sin^4 B \\ &\quad \quad \quad - \sin^4 C \}^{\frac{1}{2}} \\ &= \{ (\sin 2A + \sin 2B + \sin 2C)(-\sin 2A + \sin 2B \\ &\quad - \sin 2C)(\sin 2B + \sin 2C - \sin 2A) \\ &\quad \quad (\sin 2C + \sin 2A - \sin 2B) \}^{\frac{1}{2}} \\ &= \{ (4 \sin A \sin B \sin C)(4 \sin C \cos A \cos B) \\ &\quad (4 \sin A \cos B \cos C)(4 \sin B \cos C \cos A) \}^{\frac{1}{2}} \\ &= \{ 4(4 \sin^2 A \cos^2 A)(4 \sin^2 B \cos^2 B) \\ &\quad \quad \quad (4 \sin^2 C \cos^2 C) \}^{\frac{1}{2}} \\ &= 2 \{ \sin^2 2A \sin^2 2B \sin^2 2C \}^{\frac{1}{2}} \\ &= 2 \sin 2A \sin 2B \sin 2C. \end{aligned}$$

Cambridge Mathematical Tripos, 1880 (found in September Number). Solutions by F. BOULIBEE, U. C.

4. An A. P., a G. P. and an H. P. have a and b for their first two terms: shew that the $(n+2)^{\text{th}}$ terms will be in G. P. if

$$\frac{b^{2n+2} - a^{2n+2}}{ba(b^{2n} - a^{2n})} = \frac{n+1}{n}.$$

$(n+2)^{\text{th}}$ term of A. P. $= a + (n+1)(b-a)$,

$(n+2)^{\text{th}}$ term of G. P. $= \left(\frac{b}{a}\right)^{n+1} \cdot a$,

$(n+2)^{\text{th}}$ term of H. P. $= \frac{ab}{b + (n+1)(a-b)}$;

these are in G. P. if

$$\frac{a + (n+1)(b-a)}{1} \times \frac{ab}{b + (n+1)(a-b)} = 2 \left\{ \left(\frac{b}{a}\right)^{n+1} \cdot a \right\}^2,$$

that is if $\frac{b^{2n+2} - a^{2n+2}}{ba(b^{2n} - a^{2n})} = \frac{n+1}{n}$.

6. There are n points in a plane, no three of which lie in a straight line. Find how many closed r -sided figures can be formed by joining the points by straight lines.

Number of figures equal combinations of n things, taken r at a time $= \frac{1}{r} \left[\frac{n!}{(n-r)!} \right]$, since no three of the points are in a straight line.

(vii.) If an arc of ten feet on a circle of eight feet diameter subtend at the centre an angle $143^\circ 14' 22''$, find the value of π to four decimal places.

$$\frac{10}{8\pi} = \frac{143^\circ 14' 22''}{360^\circ} = \frac{515662}{1620000}$$

$\therefore \pi = 3.1415$.

(x.) Establish the identity

$$\begin{aligned} \tan \frac{x+y}{2} \tan \frac{x-y}{2} &= \frac{\operatorname{cosec} 2x \operatorname{cosec} y - \operatorname{cosec} 2y \operatorname{cosec} x}{\operatorname{cosec} 2x \operatorname{cosec} y + \operatorname{cosec} 2y \operatorname{cosec} x} \\ &= \frac{\frac{1}{\sin 2x \sin y} - \frac{1}{\sin 2y \sin x}}{\frac{1}{\sin 2x \sin y} + \frac{1}{\sin 2y \sin x}} \\ &= \frac{\sin 2y \sin x - \sin 2x \sin y}{\sin 2y \sin x + \sin 2x \sin y} \\ &= \frac{2 \sin y \cos y \sin x - 2 \sin x \cos x \sin y}{2 \sin y \cos y \sin x + 2 \sin x \cos x \sin y} \end{aligned}$$

$$\begin{aligned} &= \frac{\cos y - \cos x}{\cos y + \cos x} = \frac{2 \sin \frac{x+y}{2} \sin \frac{x-y}{2}}{2 \cos \frac{x+y}{2} \cos \frac{x-y}{2}} \\ &= \tan \frac{x+y}{2} \tan \frac{x-y}{2}. \end{aligned}$$

PROBLEMS.

165. Prove that the equations

(1) $x + y + z = a + b + c$,

(2) $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$,

$$(3) \frac{x}{a^2} + \frac{y}{b^2} + \frac{z}{c^2} = 0,$$

are equivalent to only two independent equations of $bc + ca + ab = 0$.

166. A point is taken in an equilateral triangle and the distance from that point to the angles of the triangle are 10, $7\frac{1}{2}$ and $12\frac{1}{2}$ chains; find the area of the triangle.

167. The number of combinations of $2n$ things taken n at a time of which n and no more are alike is 2^n , and the number of combinations of $3n$ things of which n no more are alike, is $2^{2n-1} + \frac{2n}{2\binom{2n}{n}}$.

J. H. BALDERSON, B.A.,
Math. Master, High School, Mount Forest.

168. Find the value of x and y in the following equations:

$$x^2 - y^2 = a^2,$$

$$x^2 + 3xy^2 = b^3.$$

PROF. EDGAR FRISBY, M.A.,
Naval Observer, Washington.

Selected from various sources.

169. Prove that

$$50 \{ (x-y)^7 + (y-z)^7 + (z-x)^7 \}^2$$

$$= 49 \{ (x-y)^4 + \dots \} \times \{ (x-y)^4 + \dots \}^2.$$

170. If, in a triangle, $C = 60^\circ$, prove that

$$\frac{1}{a+c} + \frac{1}{b+c} = \frac{1}{a+b+c}.$$

171. If O be the centre of circumscribed circle of a triangle, and P its orthocentre, and P_1, P_2, P_3 the radii of circles about OPA, OPB, OPC respectively; shew that $OP^3 \{ P_1^2 + P_2^2 + P_3^2 \}$

$$= 8 \{ 1 - \cos(A-B) \cos(B-C) \cos(C-A) \}.$$

172. If $(a+b+c)^2 = a^2 + b^2 + c^2$, then $(a+b+c)^{2n+1} = a^{2n+1} + b^{2n+1} + c^{2n+1}$.

173. In a plane triangle R, r, r_1, r_2, r_3 are the radii of the circumscribed, inscribed and three escribed circles; prove that, if $(r_2 + r_3 - r_1)(r_2 + r_1 - r_3)(r_1 + r_3 - r_2) = -8r_1 r_2 r_3$, then $r + 4R$ will be equal to the perimeter of the triangle.

174. If p_r denote the coefficient of x^r in the expansion of $(1+x)^n$, n being a positive integer, prove that

$$(1) p_1 - 2p_2 + \dots + (n-1)(-1)^{n-2} p_{n-1} = 0.$$

$$(2) \frac{1}{2} p_1 - \frac{1}{3} p_2 + \dots$$

$$+ \frac{1}{n+1} (-1)^{n-1} p_n = \frac{n}{n+1}.$$

$$(3) 1.2 p_1 - 2.3 p_2 + \dots + (n-1)n(-1)^{n-2} p_{n-1} = 0.$$

$$(4) \frac{p_1}{2.3} - \frac{p_2}{3.4} + \dots$$

$$+ \frac{1}{(n+1)(n+2)} (-1)^{n-1} p_n = \frac{n}{2(n+2)}.$$

175. Prove that the n^{th} odd power of an odd number greater than unity can be presented as the difference of two square whole numbers in n different ways.

PAST AND PRESENT.—*Paterfamilias* (to his son): Do you mean to say they don't punish you for being idle? Why, in my time at Harrow, a fellow who didn't know his lessons was flogged, as certain as—

Son (amused): Oh! no one learns their lessons now, except the regular mugs, and fellows grinding for an Exam.!

Paterfamilias: How the deuce, then, do you expect to get into the Army? The competitive examination is most severe.

Son (gaily): Oh, six months at a Crammer's will do that all right, never fear! No one ever passes direct from school, you know.

[*Visions of £10 a week for a year, and failure at the end of that, fl'at before Paterfamilias, who feels accordingly.*].—Punch.

Did we not live in Ontario, we might regard the above as an attempt to *punch* a "crammer" very hard on us.

CONTEMPORARY OPINION ON EDUCATIONAL TOPICS.

REV. DR. McCAUL,

THE EX-PRESIDENT OF UNIVERSITY COLLEGE.

[From "*The Varsity*."]]Farewell, a word that must be and hath been—
A sound which makes us linger:—yet—Farewell!

The opening of the present academic year will be remarkable, if only because it marks a conspicuous blank in the roll-call of the College professorate. One of "the old familiar faces" will be seen less often now, and there will be missed in the cloistered halls, through which well-nigh half a century of University history has streamed, the venerable form of one who will long be kindly remembered by many generations of gownsmen. The Rev. Dr. McCaul has been so long identified with the College and the University, that it is almost impossible to realize that his active connection with both has ceased. But age, with its growing infirmities, must tell on men of the best physiques, and these come all the sooner when more than an ordinary lifetime has been spent in arduous and faithful devotion to the public service. It is "the inevitable" which all must anticipate, and to which all must submit. Our late Professor of Classical Literature has vacated permanently the Chair which he has adorned with his learning, and dignified with his many public and private virtues. To the youngest and the most vigorous professor on the staff there will come a day, when he, too, must lay down the wand of office, however wisely swayed, and retire from his place in the lecture-room, however honourably filled, to a well-earned repose.

The severance of the tie which bound Dr. McCaul to the College could scarce have been made, on his part, without a pang of genuine regret. To not a few men who passed under

his hand in the course of nearly forty years of collegiate work, and who are now scattered far and wide in the world, the announcement of his permanent retirement will be felt even more keenly. It will seem like the reluctant, tender closing up of more than one chapter in their record of old college days, and will suggest many a bright thought and pleasant memory of his genial, manly influence and ready mother-wit, of acts of friendship done when most needed, and courteous and thoughtful consideration for the hard-wrought, struggling student. To graduates and undergraduates everywhere, it marks the close in college history of a long and eventful epoch. The history of education in older countries has repeated itself here. There have been stirring incidents, and many vicissitudes of fortune, in those by-gone years; there have been denominational snarls to perplex and worry, perils to meet and multifarious obstacles to encounter, and there have, too, been chivalrous champions to stand in the breach; but those years have seen solid progress, much real promise, and many cheering encouragements. Above all, the King's College of the past, when our ex-President was in his early prime, with the educational ostracism of which it was the standing monument, is fast becoming a tradition. Trammelled by the fetters of creed and sectary, in a young and free country, where no favoured church should bar the entrance to any liberal school of learning, it has burst those unseemly bonds, thrown wide open its doors to all sects and denominations, become, in the largest sense, the People's College and a National University.

In all those varied changes which have helped to make our educational history, Dr. McCaul was a prominent figure, and took a decided part. Several years have elapsed since the main facts of his career have ap-

peared in the public press. A complete summary, we believe, has never appeared. The present seems a fitting time to recall them. He was born March 7th, 1807, in Dublin, the intellectual centre and literary metropolis of Ireland, and a famous university city. In his early boyhood, he was a pupil, first at "White's School," a well-known private school there, and afterwards at the "Moravian School" in Antrim. He returned to White's for a twelvemonth, before entering the University of Trinity College, which he did in 1820, while he was yet in his fourteenth year. During the first three years of his course, he devoted himself specially to mathematics, in which, as we have heard himself say, in Convocation Hall, he gained his first college prize. Dr. Sandes, afterwards Bishop of Cashel, was his mathematical tutor. In his fourth academic year he gave especial attention to classics, and obtained, besides several valuable prizes, a scholarship of £20, tenable for five years, and which entitled him, in addition, to free rooms and furnished meals in residence. His college career, up to this point, had been a series of brilliant successes, and he graduated with the highest distinctions which the University could bestow, viz.: the gold medal for classics, and the Berkeley Greek medal. Two of his competitors for these well-won honours, were the late Dr. Greig, Bishop of Cork, and the late Dr. Hamilton Verschoyles, Bishop of Killaloe, both of whom were, and continued to be, as long as they lived, his warm personal friends. Upon obtaining his degree, he gave much of his time to "coaching" pupils for the University, and achieved so many signal successes in this capacity that, upon receiving his degree of M.A., in 1828, he was appointed university examiner in classics. Continuing to live in residence, and devoting his whole time to the study of classics and classical literature, Dr. McCaul supplied a long felt want by writing and publishing a series of works on the metres of Horace, Terence, and the Greek tragedians. These were, for many years, the only text books on their respective subjects used at Trinity College, Dublin, and

are still acknowledged as valuable authorities amongst classical scholars. He subsequently published his editions of Longinus, Theocritus, and the satires and epistles of Horace, the edition last-named being at once adopted as the standard text-book by the Grammar Schools of Ireland. In 1835, the degrees of LL.B. and LL.D. were conferred upon him by the University, upon his undergoing the prescribed tests, which were, as they should be everywhere, real tests of merit, while the special and very rare compliment was paid him of remitting the fees exacted for those degrees. He had previously to this been admitted to holy orders—to the diaconate in 1831, and the priesthood in 1833, and was frequently called upon to officiate in chapel and elsewhere. It was at this time he reached an important turning-point in his career. From far across the Atlantic a request came for the appointment of a principal for the only college that could then find a seat in the chief city of the Upper Province of Old Canada. The post was offered him, and accepted; in 1838, he was appointed by the Archbishop of Canterbury—with whom the appointment rested, by order of Sir George Arthur, Lieutenant-Governor of Upper Canada—Principal of Upper Canada College. In November, 1838, he sailed for Canada, arriving in Toronto while the lurid fires of civil commotion were yet smouldering, and after the battle for responsible government had been fought and practically won. The recommendations which Dr. McCaul brought with him for his new post of duty were of the highest character, and it is no flattery to say, that probably no scholar of the mother country ever landed on our shores, for such a purpose, with more enviable testimonials of eminent ability, scholarly accomplishments, and private worth. But the College to which he was appointed was then little more than a public school. The young Irish scholar's ambitious dreams all but vanished; he was, as any one in his position might well be, not a little disappointed and discouraged. Canada is indebted to one of her own daughters for reconciling the wanderer to his new home, and the enlarged sphere of

usefulness which lay before him. In October, 1839, he was united in marriage with a daughter of the late Judge Jones, of Brockville, and thus, in the haven matrimonial, found an anchorage here, at once happy and secure. In Upper Canada College, Dr. McCaul found many things to try his mettle, and prove the stuff he was made of. But he was in every way equal to his task. He found the College an unfallowed field, but the earth was kindly, the chief husbandman was skilled, and he left it a comely vineyard, strong, vigorous and abounding. For his record there we must go to the "old boys."

Dr. McCaul's tenure of the Principalship of Upper Canada College was comparatively brief, but it left an impress which his "old boys," many of whom have filled high positions in the country, have never since forgotten. In one of the best told tales of English public school life, it is said that, amongst the boys at Rugby, there was no greater man in the world than their Head Master, Dr. Arnold. His greatness, in their minds, was not an attribute of his authority and their subjection. It was the natural and just homage paid to qualities of head and heart that truly deserved it. The good influence of "The Doctor" was permanent and life-long. It inspired "Tom Brown at Oxford," in his darkest days of undergraduateship, with new hope and fresh endeavour. Many a year after, manly Tom Hughes, in Tennessee, planting a colony of Englishmen, instils into his fellow-countrymen those principles of truth and justice, and that spirit of self-reliance and faith in one another, which he himself had early imbibed from his old Rugby preceptor. There is, indeed, much more to be learnt at college than Latin and Greek; there are lessons which are indelible in life's fresh springtime — which form character, and develop the best that is to be found in young manhood. The ruling spirit at Upper Canada in 1838-42 was of that healthful old Rugby type. There was good scholarship as well as good discipline at the head of the College, and discipline of the boyish heart and disposition, as well as of the mind and daily conduct. The testimony of the

"old boys" at Upper Canada to "The Doctor" there, is one of the best tributes that could be paid him. "He was," says one of them, "a high-minded, devoted, and impartial instructor, who made stubborn tasks a delightful pastime, and imbued us all with much of his own enthusiasm in the discharge of duty. He taught us to have noble purposes and lofty aims, manliness of feeling as well as of action, and the instincts of gentlemen. He was felt to be the personal friend of every boy in every form." Dr. McCaul's resignation of the Principalship of the College was made the ready occasion of shewing the estimation in which he was held by those most competent to judge of his services. He was presented with a handsome service of plate by the College boys generally, and to this was added a similar token of their grateful appreciation of his kindness by the pupils of the seventh form, which was more immediately under the Principal's care. From the masters of the College he was the recipient of a valedictory address couched in terms of the highest admiration and respect. On leaving the building, he was received by the boys in a lengthened line reaching to his residence in the grounds, and opening to the right and left on either hand, and, as he advanced, each head was involuntarily uncovered, and many were the wishes audibly expressed for his future welfare and happiness. His words of farewell to his youthful charge were a finished illustration of unstudied eloquence. They marked the "old man eloquent" of future years, when, whether on platform, dais, or at the festive academic board, surrounded by those who were keeping alive the memories of Convocation Day, he never failed, by the chaste elegance of his language, the apt and just sentiments which it conveyed, and the graceful and happy manner in which it was uttered, to crown the oratorical efforts of the occasion.

In 1842 Dr. McCaul left Upper Canada College for a sphere of duty in which he achieved his most enduring successes. In that year he was appointed Vice-president of King's College, and Professor there of Clas-

sics, Logic, Rhetoric, and Belles-Lettres. The Vice-presidency he held until 1848; the Professorship till the present year, which has closed his long record of splendid service in the cause of higher education. King's College was then a sectarian institution under the control of the Church of England, and, had it remained so, its general usefulness would certainly have been gone. The tests which were exacted from its students made it inaccessible to the young men of other religious bodies, and the agitation which sprung up in consequence of this was, for a time, acrimonious in the extreme. But while the University was in denominational thralldom, the press, happily, was free. It made its power and influence felt, and that not for the first time, in quarters where hitherto these had been despised. The newspapers and pamphlets of those days could unfold many a curious tale, but the net result of the fierce controversy was a complete revolution of public opinion on the subject. Parliament responded to the popular demand outside. The Hon. Robert Baldwin, the then Attorney-General, an enlightened and liberal statesman, who was in accord with the movement, introduced and carried in the Legislature, in 1849, a measure which altered the constitution of King's by abolishing the Theological Chair, and placed it upon the foundation of recognizing no religious distinctions whatever. At the same time that the secularization of the University was thus accomplished, its name was changed to that of the University of Toronto—a change which followed time-honoured precedents in other countries, in which ancient and distinguished universities are called after the cities in which they have their seats. The change was one with which, we may at least hope, "Utopian reformers" will not seriously tamper. In 1848 Dr. McCaul had been appointed President of King's, but it was in the year in which the University was thus launched forth on her new career of progress that he first assumed the familiar and best-known title of President of University College. He was in the same year, or the year after, elected Vice-

Chancellor of the University. It was in all these several capacities, and through all these long years which have since passed away, that Dr. McCaul was, indeed, one of the "Varsity men, you know"—*ficile princeps* in the galaxy of those who hold an honoured place in University annals, and whose services to *Alma Mater* have given them a lasting claim upon the gratitude of her sons.

The fruits of Dr. McCaul's ripe scholarship and rare culture were not, however, wholly lavished within the College walls. His life there was a busy one, but, like some of his late colleagues, he found time amidst its engrossing engagements to devote to other congenial pursuits. In archæology and archæological studies he found a scholar's delight, and his researches into these recordite subjects have resulted in contributions to the general stock of knowledge which have been invaluable, and have given him a very high reputation in the old world as well as the new. His work on Britanno-Roman Inscriptions, published in 1862, received flattering encomiums from *savans* in England and on the continent, where he has for many years been generally recognized as a very able epigraphist. It was followed, in 1868, by a kindred volume on Christian Epitaphs of the First Six Centuries, which was warmly welcomed by Biblical scholars everywhere, and enhanced in no small degree the author's fame. The matter of these two volumes first appeared, we believe in a series of articles in the *Journal of the Canadian Institute*, of which Dr. McCaul was for some years President, and always an active and valued member, and which in a quiet unpretentious way, has done not a little to stimulate original thought and scientific research in Canada. The prosecution of these antiquarian inquiries was attended with peculiar difficulties. The Canadian archæologist had at his command none of the rich storehouses of material which are so accessible to European scholars, and had often to grope in the dark through many devious ways. But although he laboured under the disadvantage of being compelled

to work from photographs and engravings, where others had the originals before them, he has given in many instances satisfactory explanations of inscriptions which had baffled the most celebrated epigraphists of the age. In the field of general literature, Dr. McCaul's pen has never been idle. He was editor of the *Maple Leaf*, one of the pioneer Canadian monthlies, and we may hope that many able and graceful contributions in the form of pamphlets, reviews, magazine articles, etc., which are too often regarded as of transient value, will yet be carefully culled from the *repertoires* of the past, and permanently preserved.

Dr. McCaul added to his many other accomplishments a thorough knowledge of music—a delightful relaxation for any student—in which his well-known trained experience has been found on many occasions eminently serviceable. In his college days, and for years after, he was possessed of a fine tenor voice, and was a skilful performer on several musical instruments. On the old rolls of membership of the "Anacreontic" and "Ancient Concerts" Societies, in Dublin—if these are in existence—his name will still be found. He was a popular member also of the "Bruderschaft," a celebrated musical club in the gay Irish capital, the test for membership of which was the ability to sing and play a song of the performer's own composition. In or about the year 1845 he organized the first Philharmonic Society in Toronto. He was elected its President, and so continued till its dissolution some years after. When the Society was re-organized in 1871-2, Dr. McCaul was again elected President, but in 1873 failing health unfortunately compelled his retirement from active participation in its management. His musical works comprise several anthems of well-known repute, and a pathetic sacred song of rich melody, entitled "By the Waters of Babylon." He is also the author of a number of lighter compositions, of which the ballads "Merrie England" and "In the Spring-time of the Year" were special favourites with Toronto audiences in years gone by.

The limits of the present article forbid any estimate of Dr. McCaul's many-sided character and versatile abilities. The hundreds of graduates who have sat under him, many of whom have won their way to positions of honour and influence in his adopted country, will cherish his name and labours with a loving care; the verdict of posterity will not dim the lustre which his career as one of our foremost national teachers, has shed over the scene of his early training. To the discharge of official duties, oftentimes of an exceedingly difficult and delicate nature, he brought administrative abilities of the highest order. He was an excellent man of business, and his great experience in University law and practice, and the intricacies of college custom, was invaluable. He had an intuitive knowledge of human nature, and displayed consummate tact in the control and management of students. The fact of his talents being exercised in a field so wide and diversified proves that he could be "all things to all men" in the very best sense of the maxim. He was destined to be a collegian, but he might have achieved just as high distinction in the subtle realm of diplomacy or the stirring arena of parliamentary public life. The occult magnetic force of his personal influence, which he infused into all he did was visible in the lecture-room as much as anywhere else. Students, and especially his Honor-men, could appreciate his academic antecedents; they felt that he combined the highly-refined culture of other days with the special wisdom of our own, and they responded with alacrity to the calls which he made upon them for intellectual exertion, for enthusiasm in their work, for the desire of knowledge for their own sakes, as well as its inherent preciousness. Dr. McCaul's winning qualities in all the relations of academic and private life require no eulogy. The recent ovation which he received from one of the largest assemblages that ever crowded Convocation Hall, was a triumph for the man as well as the scholar and honoured public servant. The portrait which was then unveiled will ere long be assigned a fitting place on the

walls of the University, where, in the closing words of the graduates' presentation address, "it will serve as a slight tribute to eminent services, as a testimony of affectionate regard, as a memorial which in the com-

ing years shall portray for our descendants who kneel at the shrine of learning and truth the priest who first kindled its sacred fire."

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SCIENCE DEPARTMENT.

[A series of Notes prepared for THE MONTHLY, by Henry Montgomery, M.A., Coll. Inst., Toronto.]

PTYALIN, which is the nitrogenous active principle of the saliva, has, for a considerable length of time, been generally regarded as an important agent in the digestion of starchy foods. Although there has been no doubt about the capability of saliva to convert *cooked* starch into sugar, if the saliva and starch are kept in contact with each other and at the proper temperature for a few minutes, yet many distinguished physiologists, while agreeing that saliva does perform such function in the human economy, have been unable to agree as to the particular portion of the alimentary tract in which this transformation is effected, and a few others have even gone so far as to doubt that such a change does ordinarily take place in any stage of human digestion by means of the action of saliva. The conversion of cooked starchy substances into sugar has been supposed by many to take place in the mouth itself while the food is undergoing mastication. Others, again, have held that the said change takes place in the stomach after the food has been well mixed with saliva and carried into the great digestive cavity where it is mixed with the gastric juice; and a third set of observers have believed the process to go on in both the cavity of the mouth and that of the stomach. Messrs. Flint, Brunton, Schiff, Ranke, and others, have held the last named opinion, *i.e.*, that the change begun in the mouth is, under normal conditions, continued in the stomach in the presence of the gastric secretions. On the other hand, high authorities like Bernard,

Dalton, Colin and Robin, say that gastric juice promptly arrests the action of saliva upon the amylaceous or starchy portions of food; accordingly, if the conversion of starch into sugar is truly a function of human saliva it must be accomplished either in the oral cavity or in the duodenum, or in both, and not in the stomach. Against the belief that much or any of the starch is changed into sugar in the mouth it is argued that it is not retained there for any considerable time, its passage being momentary, and only sufficiently long to admit of mastication of the more or less solid parts. With reference to this it is highly important to remember the fact, recognized by all, that saliva has no action whatever upon *raw* starch. Still, herbivorous animals possess large and highly developed salivary glands, furnishing a plentiful supply of true salivary fluid, notwithstanding the fact that the food of these animals consists almost entirely of uncooked starch, upon which saliva has not the slightest chemical action. It is to the pancreatic juice poured from the pancreas into the duodenum or upper portion of the small intestine that the function of converting raw starch into sugar really belongs. Again, carnivorous animals, such as the cat, dog, wolf and lion, have well-developed salivary glands and an abundant secretion of salivary fluid, although they neither require nor naturally partake of foods of which starch is an ingredient. What then are the functions of saliva in herbivorous and carnivorous animals? In man, and the inferior animals possessed of

salivary glands, the saliva aids largely in producing the sensation of taste, also in mastication and deglutition. "No substance can produce an impression upon the nerves of taste unless it be in a fluid form and capable of absorption by the mucous membrane. The saliva produces this effect upon the soluble ingredients of the food, and brings them in contact with the papillæ of the tongue in sufficient quantity to produce a gustatory sensation." In addition to taste, mastication and deglutition, in the human being, the salivary secretion assists the movements of the tongue in speech. But in our present state of knowledge we are not warranted in asserting that food undergoes much chemical change from the action of saliva in the mouth. On the contrary, the numerous *artificial* experiments performed, and those experiments, more or less *natural*, upon the lower animals, for instance, the dog, horse, and rabbit, as well as those upon two living men, the one a Canadian, and the other a Frenchman, all tend towards the conclusion that cooked starchy foods undergo, at all events, the greatest amount of change in the duodenum. Though this is true there still remain sufficient reasons why mastication should be very slow and thorough. As the results of recent investigations, M. Defresne has announced that ptyalin converts starch into sugar in the presence of impure gastric juice, as rapidly as it does in the mouth. But pure gastric juice suspends its action. However, when the food reaches the duodenum the saliva that has been conveyed with it retains its activity, and the duty is fully discharged.

At the recent meeting of the American Association for the Advancement of Science, probably the most valuable contributions were the papers by Professor Cope on the "Origin and Succession of Felidæ;" by Prof. Morse on "Observations on Japanese Brachiopoda;" Prof. Wilder on "The foramina of Monro in man and the domestic cat," and "The *crista fornicis*, a part of the

mammalian brain apparently not hitherto described;" Prof. Alex. Agassiz on the "Palæontological and Embryological Development of the Sea-urchin;" and Prof. J. W. Dawson on "The Pulmonates of the Palæozoic period." Prof. Agassiz' address was most elaborate, and presented the results of very careful and lengthened researches. While admitting and demonstrating that evolution to a limited extent does take place, Prof. Agassiz, who is ever clear and pointed, expressed the opinion that the construction of a genealogical tree, as attempted by some, is trifling nonsense, and impossible. Also, in the discussion upon Prof. Cope's paper, the fact was forcibly impressed on the meeting that the genealogical tree, constructed from the study of any single set of animal organs, is either altogether reversed or terribly confused by the study of another set of organs belonging to the same animals. For example, by the comparison of the teeth it *may* be inferred that A has been evolved from B, and the latter from C; but on comparing the structure of the brains, or of the locomotive organs of the same creatures, C may appear to have been evolved from A, or to be the descendant of B. In short, it is when the subject is grasped in its *entirety* that the grand difficulties in the way of the evolutionist present themselves. In his address Dr. Dawson gave detailed accounts of the six species of land-snails from the Devonian and Carboniferous rocks. *Pupa Bigsbii* of the Nova Scotian coal-measures, and *Straphites grandava* of the Devonian formation of New Brunswick, are new species. As no similar shells have been discovered in older rocks, and none for some distance above the Devonian, they seem quite isolated. Four of these species occur in New Brunswick and Nova Scotia, and the remaining two in the rocks of Illinois. In 1851 Sir Charles Lyell and Dr. Dawson found the first one, *Pupa vetusta*, in the material filling a hollow Sigillarian trunk. These fossils are all of one family of Pulmonate Gasteropods, and are all intimately related to living forms.

MODERN LANGUAGES.

NOTES ON CHRISTOPHE COLOMB.

CHAPTER I.

Dieu se cache. . . l'ensemble—God is hidden in the details, and unveiled in the sum of human affairs.

Aucun sensé. . . nié—No reasonable person has ever denied.

Ne fussent reliés—Were bound together. Subj. after *nier* (so after *douter*), used negatively.

Suspendu à—Held in.

Pour concourir. . . dessein—To carry out one design.

Comment. . . pensée—How could he who has given thought to his creature, be himself without thought?

Par-dessus. . . l'action libre—Above and beneath the free action.

Qui fait—Which constitutes.

Se mouvoir. . . s'égarer—Move, act, go astray.

Du bien. . . mal—Of good and evil.

Selon. . . viciée—According as their intention has been more upright or vicious.

Et à elle seule—And to it alone.

Se les réserver—To reserve them to itself.

Fins—Ends.

Sont de nous et sont à nous—Are of ourselves and belong to ourselves.

Se servir de—To make use of.

Dont. . . même—The source of which it is difficult to find in man himself.

Voilà pourquoi. . . génie—That is why a mysterious name has been given to it, and one which is not well defined in any language : genius.

Fuit naître—Produces, brings forth.

Sans que. . . sa possession—Without its being in the power even of him who possesses it, to give an account of its nature.

L'aimant—The loadstone.

L'attire—Attracts it.

Conscience—Consciousness.

Voilà—Such were.

CHAPTER II.

Dont. . . travaillé—With which he was engaged.

Chaque fois que—Whenever.

A son insu—Unknown to itself.

Au moyen de—By means of.

Resserrent. . . people—Amalgamate into one people.

Epuisée de—Exhausted with.

Et que Dieu—And when God.

Part—Comes forth.

Entraînant les regards—Attracting the attention.

Au verbe transformateur—For the transforming Word. In Greek *Λόγος*.

Un seul esprit—One single mind.

Servitude—Domination.

Arracher. . . à—To snatch. . . from.

Faire prévaloir—To cause to prevail.

Le Liban—Libanus.

Répond d'avance—Answers beforehand.

Ainsi de—So of.

Des deux côtés—On both sides.

Promène—Leads.

Asservi—Subdued.

Un moment—For a time.

Ainsi de nos jours—So in our day.

Non plus sous—No longer under.

Chargé—Commanded.

Qui ait jamais serré—Which has ever brought together. Subjunctive after a superlative.

Vapeur—Steam.

Chemins de fer—Railroads.

Qui cherchent. . . gouvernail—Which have not yet found their rudder.

Reserrement—Bringing together.

En conclure—Conclude from it.

En faisant avancer—By advancing (*transitive*).

Dont... l'histoire—Whose history.
 On attendait quelque chose—Something was expected.

QUESTIONS ON OTTO'S GERMAN GRAMMAR.

LESSON I.

1. Decline the Definite Article.
2. What words are declined like the Definite Article?
3. Decline *dieser* and *jeder*.
4. Go through the present tense, indicative mood, of *haben*.

LESSON II.

5. Define the Indefinite Article *ein*.
6. What words are declined like the Indefinite Article?
7. Decline *mein* and *unser*.

LESSON III.

8. What classes of words are declined according to Otto's First Declension? (Contracted form of the Strong Declension).
9. Decline *Bruder, Garten, Fenster, Bäumen, Hammer, and Vogel*.
10. Give a list of ten words ending in *e* (from *en*) declined by the First Declension of Otto (Contracted).

LESSON IV.

11. What classes of words are declined according to Otto's Second Declension? (Weak Declension, masculine.)
12. Decline *Knabe, Neffe, Student, Planet, Fürst, and Held*.
13. What monosyllabic nouns belong to the Second Declension? (Weak.)
14. Go through the present indicative of *sein*, to be.

(To be Continued.)

NOTES ON STUMME LIEBE, BY MUSÄUS.

BY A. MUELLER, MODERN LANGUAGE MASTER, BERLIN HIGH SCHOOL.

(Continued from page 281.)

p. 19, l. 11.—Hausrath, Hausgerath—Piece of furniture.

p. 19, l. 27.—Orpheus, Eurydice, Orkus—See Smith's Classical Dictionary.

“ 28.—Und wenn zu jener Zeit—Ubergangen sein, “ and if at this time the bedlam sentiments of our ‘original geniuses’ which were raging in the past decade, but now have disappeared like humble bees after the first frost, had been prevalent, this calm would have changed into a sudden hurricane.”

Kraftmänner welche im abgewichenen Jahrzeud tosten. M. here takes the opportunity of hitting at Lenz, Müller the painter, Klinger, etc., *i.e.*, the writers of the Sturm und Drang period. For further particulars of which see “Outlines of German Literature,” Gostwick and Harrison, pp. 228-29.

p. 21, l. 34.—Behagen—Delight.

22, l. 18.—Scherztreiber—Drolls.

“ “ —Sehr bei Mittel war—Since he was well off.

23, l. 9.—Stadtkammerei—City treasury—From Camera.

“ l. 10.—Meierhof—Farm.

“ l. 28.—Schoosz jünger—Pet.

24, l. 18.—Die drei hohen Festtage—Are Christmas, Easter and Whitsuntide.

26, l. 24.—Suada—See Smith's Classical Dictionary.

“ Salomonische Skizze—See foot note, p. 9.

27, l. 13.—Myrtenkrone—In Germany brides wear myrtle wreaths instead of orange blossoms.

28, l. 2.—Kürisch, obsolete for wahl-risch—Particular in choice.

31, l. 9.—Reitklepper, Klepper—Nag.

32, l. 16-23.—This custom is still kept up. People who intend to engage in any particular work, such as building, going on a journey, or the like, request congrega-

- tional prayers, which request is announced after the sermon.
- p. 32, l. 35.—Kaiser Maximilian I., 1493-1519—See reign of Henry VIII.
- p. 34, l. 7.—Basz—good, obsolete, from which better.
- p. " l. 27.—Mauthamtsdespotismus—Despotism of custom-house.
- p. 35, l. 1.—The war of the famous league of Cambray, 1508, concluded between France, Spain, Pope Julius II., and Maximilian against Venice.
- p. 36, l. 10.—Bassa—Pasha.
- p. 37, l. 6.—That ihm ehrlich Bescheid—Pledged him right well.
- " l. 12.—Mutterfasz—The oldest cask.
- " l. 14.—Firnenwein—Last year's wine.
- " l. 33.—Tranchirmesser from Fr. trancher. Ger. Vorlegemesser—Carving knife.
- p. 40, l. 7.—Hoch an die kreide lief—Amounted to a large sum, *i. e.*, it would take much chalk to write it all down.
- " l. 23.—Das euch Glimpf und Namen gebriecht—Which destroys your reputation and good name.
- p. 41, l. 8.—Aber da giebt, verschmaheten—But there is a kind of people who annoy me with all sorts of buffooneries, fool and mock me with scraping and bowing, weigh their words, make long orations without sense and wit, imagine that they please me with fine phrases, and act like women at a christening feast. If I say help yourself, they, out of respect, take from the dish a little bone which I would not give to my dogs.
- p. 42, l. 21.—Anne of Bretagne, daughter and heiress of Francis II., was betrothed to Maximilian, but was compelled to marry Charles VIII. of France, 1491. In 1499 she became the second wife of Louis XII., successor of Charles.
- p. 42, l. 23.—Kanten—Lace.
- p. 44, l. 9.—Pomponius Atticus—See Smith's Classical Dictionary, under "Atticus."
- p. 45, l. 4.—Atzungskosten—Cost of maintenance. Atzen, to feed birds.
- p. 46, l. 14.—Rheinberg and Rummelsberg are fictitious names.
- " 27.—Flecken—A market town.
- " 23.—Lyker—Lyck a small town on the eastern boundary of Prussia, but M. doubtless meant Liège, the Dutch spelling of which is Luik.
- p. 47, l. 3.—For mag, read werde.
- p. 48, l. 16.—Leuchte—Lantern.
- " 32.—Rasaunen—rummage. Lat. rado.
- p. 50, l. 21-22—Blickte in den—die Sterne putzten—Looked at the scarry moon and counted the meteors.
- p. 51, l. 22.—Freund Zimmerman, Joh. Geo. von Zimmerman, a renowned physician and writer of *An die Einsamkeit*, 1728-1795.
- p. 53, l. 7.—Drauzen ging's Thür auf—Outside there was an opening and shutting of doors.
- p. 53, l. 30.—Beinernen—Fleshless.
- p. 55, l. 29.—Haubenstock—Milliner's-block.
- p. 56, l. 24.—Kahlkopf—See II. Kings, ch. ii., v. 23.
- p. 59, l. 11.—Siebenschlafer—Seven youths who tried to escape from the persecution of the early Christians under Decius, 251, hid in a cave near Ephesus; here they slept till 446, when they were discovered. The Koran also has this legend.
- p. 59, l. 30.—Der den Schalk im Schilde führt—Who designs tricks.
- p. 61, l. 14.—Sich versah—Expected.
- p. 62, l. 24.—Engelgroschen—About ten cents.
- p. 63, l. 28.—Apfelkröse—Apple-core.
- p. 64, l. 3.—Sechsenroten—About seven cents.
- p. 65, l. 3.—Nichts für ungut—Do not take it amiss.

- p. 67, l. 6.—Marterburg, Tiber, etc.—Are streets and squares still known by that name. Der grosze Roland is a huge monument opposite the city hall; an old legend tells that the city will cease to be a free city if this monument should fall and not be re-erected within twenty-four hours.
- p. 68, l. 5.—Der Apfel fällt nicht weit vom Stamm—Like father, like son.
- p. 69, l. 16.—Auszerwesentlichen — Minor, unimportant.
- p. 70, l. 2.—Freund Hein—Death depicted as a skeleton with a scythe.
- p. 71, l. 13.—Hallorensprung—The labourers of the Halle salt works are called Halloren.
- p. 72, l. 27.—Ehrtengelagen—Banquets.
- p. 72, l. 18.—Harpye Celano—See Smith's Classical Dictionary.
- p. 74, l. 27.—Schnapwefc—A reel with a clapper indicating when a skein has been wound up.
- p. 75, l. 9.—Schüsseln—Courses.
- “ 19.—Hiobspost—Sad news, such as Job received.
- “ 27.—Rocken—A distaff full of flax or hemp.
- p. 76, l. 10.—Franz aber war; Text unter—Frank, however, could speak, and composed to the tender Adagio which he had formerly played for her, a suitable text.
- p. 77, l. 4.—Erst geborne Sohn der Kirche—King of France, Louis XVI.
- p. 77, l. 32.—Etwas auf's Korn nehmen—To aim at something.
- p. 80, l. 7.—Das Aufgebot bestellen—To publish the bans.

PUBLIC SCHOOL DEPARTMENT.

[Contributed to, and under the management of, Mr. S. McAllister, Headmaster of Ryerson School, Toronto.]

CRAMMING IN OUR PUBLIC SCHOOLS.

THOUGH that mainspring of cramming in modern school systems—Payment by Results—has spread its blight over our High Schools, it has not yet invaded our Public School system. Nevertheless cramming exists in them to a dangerous extent. It is indulged in by those teachers who have more zeal than knowledge, by those who have knowledge but not zeal, and by a third class who have neither knowledge nor zeal, and who have little business in the profession at all. With these it is begun when the child is made to go through the dreary task, day after day, of learning its letters, without advancing one step in the path of knowledge. If the name of each letter were its word sound, then the

child would make progress by learning its A B C; but as this is in very few instances the case, the process our young scholar goes through is not unlike that of the student of French, who first learns the language with English pronunciation until he can write it with ease, and then has to learn the pronunciation as it is heard in ordinary speech. The child, when he begins to read in our First books, meets with the words, “It is an ox.” Now, in the utterance of not one of these will the sounds he has been accustomed to attach to the letters be of any avail to him, and he has perforce to be taught the sounds that belong to these letters in combination. Take for instance the first letter in this sentence; its name has the sound of *a(h)·ee*; but in combination that of *eh*. Even when the power to read easy sentences without difficulty, has been gained;

the child is too often taken through the routine of a reading lesson, without an effort being made to rouse any interest in the meaning of what is read. The teacher is content if the mechanical process of uttering the word is well done, without ever thinking of ascertaining whether the child's mind is actively engaged on the matter he is reading or not. It would be well if many followed Philip's example with the cunuch. There was in an English school a class that made very slow progress in learning to read. They were made to go faithfully through the allotted reading lesson every day, but the teacher felt it more important to see that every child read than to see that he understood what he read. A new teacher took charge of the class, and at once set about awakening interest in the lesson by a series of well-put questions. In a very short time there was perceptible improvement, not only in the reading of the class, but in the mental activity of the scholars. In the present day our educational authorities have directed more attention to this subject, but characteristically enough, their efforts have aimed rather at improving the mechanical rendering of a reading lesson, than enabling the mind to absorb the meaning of what is being read. But is not this like making clean the outside of the cup and of the platter, and neglecting the inside? It is very questionable whether one in a hundred will ever be benefited, commensurately with the efforts expended, to render sentences with elocutionary effect. And this is now insisted on to the neglect of that invaluable habit of grasping with facility the meaning of what is read. It may be urged, that the teaching of elocution cannot be done, unless this habit has been formed; but this is a fallacy, as every teacher of any experience knows. How often, for instance, is a scholar found who can read admirably an ordinary sentence, and yet when called upon cannot explain a word of it. When Bacon says that "reading maketh a full man," he estimates it as a means of mental, not of voice or chest, culture.

The day is well-nigh past when that time-honoured system of cramming by means of

the spelling-book and dictionary was in high favour. It must be admitted that there are many words in our language that a child can only learn to spell as he learns the multiplication table, but that teacher who can wisely direct special attention to these, to the exclusion of thousands that can be learnt best in connection with ordinary reading lessons, shews the highest skill. The teaching of writing is not free from our besetting sin. Many children are taught to write without the slightest effort being made to give them intelligent ideas of the shape of the letters, of their relative sizes, of the way of joining them, and of the neatness not to say artistic finish, that may be shewn even in plain writing. It is to be feared that the introduction of copy-books with headlines has not been an unmixed benefit. The teacher who is freed from the responsibility of "setting copies," is liable too often to neglect to explain those that are set. It might be well to have a copy at the head of each alternate page only, and have the other page left for the teacher to practise his scholars upon work that may be necessary to correct faults that have appeared in the previous copies.

When we speak of arithmetic, the chief phase of cramming that looms up, and enlarges the more steadfastly we gaze upon it, is the nonsensical habit of teaching by rule. A boy once applied for admission to a Collegiate Institute, and was given a question in arithmetic to work, to which he failed to get a correct answer. The teacher asked him how he did it, and he gave the rule; said the teacher, "we do it by the rule of common sense;" the boy replied, "I never learnt that rule." There are vast numbers who, like this boy, are accustomed to work everything by book rule, instead of by that of common sense. We know a teacher of high standing, who, when a question of any difficulty is given, requires a statement of the rule that has been used to solve it. After the first four rules have been taught, that teacher is the wisest who assists the scholars to find out rules for themselves, and formulates them as soon as clear ideas have been obtained. In many cases, rules, like definitions,

should be a statement in concise form of knowledge already acquired, or of thoughts already in the mind.

When we take up the subject of grammar, we find that an immense quantity of indigestible stuff is attempted to be stowed away in children's brains, without any reasonable prospect of its ever proving of practical use. Scholars are carried through all the intricacies of parsing and analysis, and yet are not taught to write or speak in grammatical English. They are burdened with definitions, to many of which they can attach no idea, while little effort is made to assist them in the power of expressing their thoughts correctly in words—yet "grammar is the art of speaking and writing the English language correctly." That the number of teachers is decreasing who are content with this kind of cramming we are assured; and the sooner they disappear the better will it be for the country. Already there are healthful signs of a movement to give more attention to English subjects in our course, and we have no doubt the unmistakable deliverance on this subject, of the President of the Ontario Teachers' Association at the late Convention, will help it forward. When increased attention is directed to the study of grammar, we have no doubt a more rational method of teaching it will be adopted, and one leading to really practical results. A limit table drawn up by a head-master of the Public Schools in one of our most thriving towns has lately come under our notice, and a few extracts from it will prove that cramming is not confined to subordinate teachers. For children in the Second Book, the grammar is to comprise, I.—The first idea of a sentence; II.—A knowledge of the various kinds of sentences, such as declarative, interrogative, optative, imperative, and exclamatory sentences; III.—Use of words in a sentence, and their classification into parts of speech. Now, surely the gentleman who laid down this scheme had no serious thought of the tender intellect of Second-book scholars to expect their brains to be muddled with distinctions of the various kinds of sentences; and what conception can he have of the

growth of the mind, to expect them to be able to form distinct ideas as to the properties of a conjunction, or of a preposition in the classification into parts of speech. His position as a teacher in the Province justifies us in saying that he should know that the power of comparing judgments of the mind, which the use of these two parts of speech implies, is very weak in children below ten or twelve years of age. But the acme of cramming is reached in the limit for drawing. A certain number of definitions in drawing are to be recited by pupils before leaving the Second Book, and those include, a point, a straight line, a waved line, and fourteen other kinds of lines; four definitions of surfaces, four of angles, and nine of triangles, including one of similar triangles. Now, supposing all these definitions have been accurately learnt, how much knowledge of the various things defined, has the child gained? Has it gained any? Is it in the nature of things that children in the Second Book can form distinct conceptions of what they learn by rote, especially when it is beyond their capacity?

We had intended to touch upon the cramming that pupils are liable to in some of the other subjects, but we have said enough to direct the serious attention of our readers to the evil. We trust it will prove to be seed sown on good ground. So long as it prevails, the time of pupils in school is to a considerable extent wasted; and this in itself is a serious evil, when we consider the exacting demands of our modern life upon the intellect.

EXAMINATION QUESTIONS, HAMILTON MODEL SCHOOL.

The following are the questions set for the professional examination at Hamilton Model School, forwarded to us by Mr. J. H. Smith, Public School Inspector of Wentworth.

Education—Time, Two hours.

I.—What is meant by "synthesis" and "analysis," as applied to methods of teaching? Illustrate your answer (1) by an exam-

ple in grammar, (2) an example in arithmetic. Value 12.

II.—What do you understand by education? by instruction? How are they related to each other. Value 9.

III.—In what order would you teach the facts of geography? Illustrate by giving the notes of a lesson on the map of North America. Value 9.

IV.—How would you illustrate the following definitions: Island, lake, mountain, cape, river, isthmus? Value 6.

V.—What do you understand by "object lessons?" Under what conditions may they be made effective? Give a list of twelve subjects which you would select for your first lessons. Value 12.

VI.—What is good reading? Name three or more characteristics of good reading. Explain clearly your method of commencing the subject. Value 12.

VII.—Briefly explain the following methods of teaching reading: alphabetic, word, phonic, phonetic.

VIII.—Discuss the value of mental arithmetic (1) in regard to mental training, (2) in regard to the acquisition of knowledge. At what stage of the pupil's advancement would you begin it? Give a problem suitable (1) to the 3rd class, (2) to the 4th class, and fully explain each. Value 15.

IX.—Explain briefly different methods of receiving answers from pupils. State which you prefer and why. Value 6.

X.—Write a short essay on the formation of habits in the school-room. Value 7.

School Law—Time, one hour.

I.—State the general duties of trustees in rural school sections. Value 10.

II.—Explain the law and regulations as to the suspension and expulsion of pupils. Value 10.

III.—What are the regulations in regard to truancy, obstinacy, the use of school property? Value 10.

IV.—State how the money required for school purposes is to be provided, and under what circumstances trustees may borrow. Value 10.

V.—State the law and regulations in regard to registers and reports. Value 10.

(To be continued.)

COUNTY OF VICTORIA MODEL SCHOOL,
OCTOBER, 1880.

EDUCATION.

Examiners—J. H. Knight and W. E. Tilley.

1. For what reasons is it desirable to have a Time Table?

2. How would you secure quietness in a school?

3. Discuss the merits of detention after school hours as a punishment.

4. What lessons would you set as home work in the Third Class; and what time should the same occupy?

5. How would you correct indistinct speaking and reading in school?

6. What would you do to assist pupils in preparing a reading lesson in the Fourth Class?

7. How would you begin to teach History?

8. How may a teacher encourage honesty and honour among pupils?

9. In what subjects is it most desirable that a teacher should prepare his lessons, and why?

10. Discuss the advantages and disadvantages of pupils taking places in a class.

SCHOOL LAW.

Examiner—J. H. Knight.

1. Define the terms "resident," "non-resident," and "non-resident ratepayer," as applied to parents and children, and state how the pupils thus distinguished are classified in the half-yearly reports.

2. What days in the year are vacations and holidays in the public schools?

3. Name and define the Public School Grants.

4. Distinguish between suspension and expulsion of pupils.

5. To what documents should the corporate seal of the Trustees be attached?

6. What are the regulations respecting presents, collections, subscriptions, notices and prizes?

(To be continued.)

HIGH SCHOOL DEPARTMENT.

REPRESENTATION IN THE SENATE
OF TORONTO UNIVERSITY.

At their August meeting, the High School Masters passed a resolution requesting the Minister of Education to give them additional representation in the Senate of Toronto University. As a matter of justice this is only to be expected. Upper Canada College has one representative, and the hundred and odd High Schools and Collegiate Institutes, with their three or four hundred Masters, have no more. There can be little doubt either that were there more of the purely educational element in the Senate it would be better for our system of public instruction. Lawyers and Doctors, even when Toronto Lawyers and Doctors, are all very well in their way; but when the interests of our High Schools are to be considered, give us men connected with our High Schools.

Of late years these schools have become an exceedingly important factor in Provincial education. Their Masters are, in most instances, men of liberal education and advanced views; and we should augur well from a larger infusion of this class in the Senate. Publicity seems to have quickened the circulatory process of this august conclave; and, though the public are evidently not admitted behind the scenes in all the matters that engage their attention, there has been a manifest shaking up of the dry bones. A few good live men to back up our present able representative on the Council Board would, we believe, be of great service; the concession would, at any rate, be only justice to a class that is every year becoming more important and influential. It is said, with what degree of truth we are not in a position to say, that the wishes of the High School Masters have been treated with contempt by some of the smart young lawyers and doctors who

through Toronto votes have been placed in the position of University Senators. This is not as it should be. So far as secondary education is concerned, the High School Masters are better acquainted with its requirements than any other class can be, and they should have an opportunity, better than is now afforded them, of giving effect to their opinions. Even in regard to higher education their opinions are of some value, certainly of more value than those of the members who have been appointed for religious-political reasons.

It is, of course, perfectly true that the University is not solely for the High Schools, but it is also true that it is the duty of both to advance public education. That the latter class are doing this is universally admitted; it is by no means well established that the former is equally successful. It may, indeed, be fairly questioned whether the unprogressive character of the Senate of this University has not done much to impede educational progress. The leaders of the College Council, which has recently distinguished itself by refusing a woman admission to lectures, are the leading spirits of the Senate; and, though the admission of women to University Examinations has been conceded, women broke in the door; it was not held invitingly open to them.

There are many changes which the Senate could easily make that would conduce materially to the prosperity of our system of instruction. Natural Science, to take one instance, should be represented to some extent in the list of matriculation subjects. It is not true that the schools are unable to do the work. Some schools are not, it must be admitted; but can all our High Schools turn out good classical scholars? Those who have had opportunities for forming a reasonable opinion, admit that a six months' course of

Chemistry at a High School or Collegiate Institute is worth more, as it is taught there, than the paltry smattering a second or third year undergraduate can obtain by attending lectures. The Minister of Education will find that from conceding to the High School Masters increased representation in the Senate, much good will result, and we trust to see him make a move next session in this direction.

SCHOOL ORGANIZATION.

THE following time-table of one of our Institutes will show the system of organization pursued therein. We shall be happy to publish those of other schools. In the following synopsis, the time of each recitation is three quarters of an hour. From three o'clock to four is generally, however, taken as one space. H. = Honor; P. = Pass.

UPPER SCHOOL.

Senior Matriculation and First Year.

Monday.—Greek, P.; French, P.; Trigonometry, H.; Trigonometry, P.; Geometry, H.; Latin, P.; Algebra, H., and Greek Prose and Grammar.

Tuesday.—Conics and German, P.; Algebra, P.; Greek, H., and French, H., and Coriolanus; Bain; Trigonometry, H.; Latin, P.; Latin Comp., P., and Latin Comp., H.

Wednesday.—Craik; Latin Comp. H., and German, H.; Algebra, P.; Latin and Greek Grammar, H.; Trigonometry H., and Latin, H.; Conics; Greek Prose and Grammar; Greek, H., and French, H.

Thursday.—Greek, P.; French, P.; Algebra, H., and Latin H.; German, H.; Geometry, P.; Latin Comp.; Latin and Greek Grammar.

Friday.—Conics; Latin, P., and Abbott and Seeley; Algebra, P.; Greek, P.; Chaucer; Trigonometry, P.; Algebra, H., and French, H.; Latin Comp., H., and German, P.

Junior Matriculation of 1881.

Monday.—Arithmetic, H. and P.; Latin, P.; Latin Comp.; Greek, H., and French;

Geometry, H.; Latin, H., and History H.; Geometry, P., and Greek Prose and Grammar.

Tuesday.—German and Greek, H.; Latin, P.; Algebra, H. and P.; Trigonometry, H.; Geography; Julius Cæsar; Latin Comp., P.

Wednesday.—Geometry, H.; German and Latin Comp., H.; French and Algebra, P.; Latin and Greek Grammar, H.; Julius Cæsar; Greek, H., and French; Greek Prose and Grammar, H.

Thursday.—Arithmetic, H. and P.; Greek, H., and History H.; English Grammar; Latin, H., and German; Geometry, H.; Algebra, H. and P.; Ancient History and Geography; Latin Comp., P.

Friday.—Latin H., and German; Trigonometry, H., and Geometry, P.; Lady of the Lake; Algebra, H., and P.; Ancient History and Geography; Greek, H., and French; Latin Comp., H., and French and German.

Junior Matriculation of 1882.

Monday.—Arithmetic; French and Latin Comp., Trigonometry, Greek, History, Geometry.

Tuesday.—Latin, Drawing (optional), Algebra, Greek and French, Geography; English, Latin Comp., and French.

Wednesday.—Latin Comp., Greek, Algebra, English, Latin, Trigonometry.

Thursday.—Arithmetic, History, English, Latin, Greek, and French, Algebra, Ancient History and Geography, Latin Comp.

Friday.—Latin, Geometry, Drawing and English, Algebra, Ancient History and Geography, Trigonometry, Latin Comp. and Grammar.

Upper School, Classes Beginning.

Monday.—Greek, Latin and French.

Tuesday.—Greek, Latin and German.

Wednesday.—Greek, Latin, French and German.

Thursday.—Greek and German.

Friday.—German, French and Latin.

Note.—Some of the classes of 1882, take Latin Comp. and German with Intermediate Forms.

First A and B—Special Classes.

- Monday.*—History, English and Algebra.
Tuesday.—Conics, Coriolanus, Bain and Trigonometry.
Wednesday.—Craik, Trigonometry, Natural Philosophy, Conics, Pope, Theory of Equations.
Thursday.—History, Algebra, Trigonometry, Natural Philosophy, English.
Friday.—Conics, Abbott and Seeley, Chaucer, Algebra, Natural Philosophy.

First C.

- Monday.*—Arithmetic, Natural Philosophy, Chemistry, Lady of the Lake, Geometry (Book work), History, Geometry (deductions).
Tuesday.—Algebra, Practical Chemistry (1½ hours), Geography, Julius Cæsar, Natural Philosophy (1 hour).
Wednesday.—Lady of the Lake, Mathematics (Problems), Algebra, Julius Cæsar, and Grammar, History (Hallam).
Thursday.—Arithmetic, History, English Grammar, Heat, Geometry, Algebra, Elocution.
Friday.—Algebra, English (The Essays), Natural Philosophy, Chemistry, Physics.

In all the Honor classes in the preceding list, there are each week, written examinations from an hour-and-a-half to two hours long, besides the usual quarterly examination. In the different Departments, some of the classes are taught together, as for instance, the English of Candidates for 1st C, and that of Pass and Honor candidates for Junior Matriculation, except on Friday, when there is a special class in this subject, for 1st C. Drawing and Music, which are optional, are taught twice a week; drill, once a week in winter, and twice in summer.

In the Lower School there are five forms, three intermediate and two junior, besides a preparatory form. This time-table we are forced to hold over till next month.

As the Upper School time-table given above is that of a school where there are eleven masters, we shall try to obtain the time-tables of schools of other grades. Every master knows the difficulty there is in understanding the time-table of another school, but we hope that at this time of the year, when teachers are thinking of their organization for the winter, publication in the above form may prove of some benefit.

 CONTEMPORARY LITERATURE.

AN ELEMENTARY TREATISE ON PLANE TRIGONOMETRY, for High Schools and Colleges. By J. Morrison, M.D., M.A., Head Master, High School, Walkerton, Ont. Toronto: The Canada Publishing Company (Limited).

ON Plane Trigonometry there are several publications of high merit within easy reach of every reader who wishes to become acquainted with this important and practical subject. Of these we may name as most conspicuous for their intrinsic literary and educational value, Colenso's, Todhunter's, Hind's, and Snowball's. In this list we do not include Professor Cherriman's (a work prepared specially for "pass men" in Uni-

versity College, Toronto, and which has passed through several editions, and has been deservedly a favourite with masters and scholars in our High Schools), for the obvious reason that it was not the author's intention to produce a complete treatise on Trigonometry. It might as reasonably, almost, be expected of a writer to produce something new (excepting problems) in Arithmetic or Algebra as in Trigonometry: hence we were not disappointed upon looking over Dr. Morrison's book, to find that he followed closely in the footsteps of the writers above referred to. If there be any fault to find it is that the writer has given too many

and too elaborate solutions in the body of the work, thus attempting to combine a Text-book and Key in one and the same book. We notice several errors and omissions which no doubt will be rectified and supplied in subsequent editions. Everyone who will take the trouble of carefully reading the book prepared by Dr. Morrison cannot fail to be impressed with the large amount of real honest work which the author has put into his very meritorious text-book. The firm from which the work issues (The Canada Publishing Company) is deserving of much praise for the efforts put forth to foster native talent, in every department of literary work.

BIOLOGICAL ATLAS: A GUIDE TO THE PRACTICAL STUDY OF PLANTS AND ANIMALS. By D. McAlpine, F.C.S., and A. N. McAlpine, B.Sc. Lond. W. & A. K. Johnston, Edinburgh and London, 1880.

BIOLOGY can be studied properly only in the physiological laboratory. Of this fact the compilers of the present work are perfectly well aware. They present it, not as a substitute for, but as a guide to, the dissection and proper examination of actual specimens of plants and animals. In their preface they say: "It is now generally recognized that a certain acquaintance with actual specimens is necessary for the proper understanding of plants and animals. By the practical study of representative forms, exemplifying the leading modifications of plant and animal life, the student obtains a basis of distinctly observed fact with which to compare other forms, and round which to cluster the information derived from books. The University of London has given practical shape to this idea by selecting a series of common types which each candidate must be prepared to examine microscopically, to dissect and to describe. In this Atlas, which is intended to serve as a guide to, not as a substitute for, practical work, drawings are given of the various points of importance exemplified by each of these types, to enable the student to make out the points for himself

on the actual specimens. Experience both as students and teachers has taught us, that in this constant appeal to the object itself, the student is greatly assisted by clear and accurate drawings. In the triple alliance, as it may be called, of description, drawing and object, is found the easiest, safest, and surest means of successful study."

The design of the work, as thus clearly set forth, it appears to us the various plates, with the accompanying descriptive text, are admirably calculated to fulfil. The plates are twenty-four in number, eight being devoted to plants, nine to invertebrate animals, and the remaining seven to vertebrate animals. They contain upwards of four hundred coloured figures and diagrams; and in them are illustrated certain selected types of the various sub-kingdoms of the vegetable and animal worlds. Thus, in the vegetable kingdom, the sub-kingdom ThallopHYta is represented by the yeast plant, the bacteria, the mucor plant or common brown mould, the penicillium or common green mould, the protococcus vulgaris, or green scum on the bark of trees, the chara, and the pteris aquilina or common bracken fern; and the sub-kingdom Phanerogamæ, or flowering plants, by a series of drawings from the horse-chestnut, onion, honeysuckle, pea, tulip, bean, etc. In the animal kingdom the sub-kingdom Protozoa is illustrated by the amœba or proteus animalcule, the colourless corpuscles of the human blood, and the vorticella or bell animalcule; the sub-kingdom Cœlenterata, by the hydra or fresh-water polypè; the sub-kingdom Annelida, by the lumbricus or common earth-worm; the sub-kingdom Arthropoda, by the lobster and crayfish; the sub-kingdom Mollusca, by the fresh-water mussel and the snail; and the sub-kingdom Vertebrata, by the frog. In the last plate, human histology, or the ultimate structure of the tissues of the human body, is illustrated. There are a few notable omissions, which it would perhaps be well to supply in future editions. For instance, among the ThallopHYta, the mosses and lichens are unrepresented; and in the zoological series, the sub-kingdom Echinodermata is

conspicuous by its absence. The new sub-kingdom, Pharyngopneusta, proposed by Prof. Huxley, being of special importance as intermediate between the Invertebrata and the Vertebrata, ought not to have been omitted.

The illustrations are excellently drawn, and are made clearer by having the various parts differently coloured ; and, so far as we have

been able to examine them, they appear to be accurate. The accompanying letterpress combines the two virtues of brevity and fulness. The plates are prefaced by some general directions for practical work, which the student will find especially useful. Altogether we can confidently recommend the work as an admirable guide to the practical study of biology.

EDITORIAL NOTES.

INSPECTORS IN THEIR RELATIONS TO THE PROFESSION.

THE Deputy Minister of Education has been holding an inquiry into the charges preferred by some of the teachers of the South Riding of Simcoe against the Rev. Mr. McKee, the Inspector of that division. The charges are chiefly that the Inspector had slept during examinations, had not visited schools, and had made false returns to cover his own shortcomings in this respect. As the Deputy Minister has not yet made his report, we shall, of course, refrain from any expression of opinion as to the probable result of the inquisition.

We are, however, credibly informed that the irregularities which were brought to light during the examination, were by no means confined to one side, and that the certificates held by some of the witnesses are not unlikely to be revoked in consequence of the admissions they themselves made.

A word or two as to the degree of departmental skill shewn in conducting the inquiry. It was commenced at Beeton, but was adjourned to Barrie after a day or so's work. A short-hand writer was employed to take the evidence, but the red tape regulations of the office would not be satisfied unless the witnesses signed their depositions ;—a most unnecessary formality, and one that has been long abandoned in Courts of Justice. This necessitated the retention of all the witnesses

at Beeton for a day, pending the slow process of extending the short-hand writer's notes !

A general remark on the subject of such inquiries may not be out of place. Both Inspectors and teachers should only resort to them after exhausting all methods of accommodation. However they terminate, a great evil must be entailed on the district. Mutual trust and forbearance have departed, and the teachers (if they fail) look on the Inspector as a possibly implacable adversary who will revenge himself upon them at the first opportunity. If the Inspector has done nothing worthy of his dismissal, we can see little prospect of future peace, except in a wholesale removal of the opposition teachers, or the transfer of the Inspector to some other County.

NEW ASTRONOMICALLY-MOUNTED TERRESTRIAL GLOBE. Mr. M. Turnbull, Toronto, Ont., Inventor and Patentee.

It is a remarkable circumstance that, in an age when scientific discoveries and inventions of every conceivable description have been advancing at a rate to which no previous age affords a parallel, little if any improvement in the method of mounting the terrestrial globe has been made since the invention of that most useful appliance in the teaching of geography ; and it is a matter for congratulation that for the first important step in the direction indicated, we should be indebted to a

fellow-Canadian resident amongst us. If we mistake not, the novel and ingenious method of mounting the terrestrial globe, recently invented and patented by Mr. Turnbull, of Toronto, is so great an improvement upon the old one, that in a few years it will altogether supersede it. We have had an opportunity of carefully examining one of Mr. Turnbull's new globes, and as we believe that its introduction into our public schools would tend to simplify and advance the study of astronomical geography, we think we shall be merely performing a public duty by giving a brief description of it, and calling the attention of teachers and others to its merits.

On an inspection of the new globe one of the first things which arrests attention is the circle, representing the ecliptic, which surrounds it midway horizontally, that is, in a plane parallel with the floor of the room. This circle is divided into twelve constellations, of thirty degrees each, representing the signs of the zodiac. It is also marked with the yearly calendar, the days coinciding with the place in the ecliptic occupied by the sun at the time. Another appliance is a brass semicircle extending from one pole of the earth to the other, representing the sun's meridian, being freely movable round the entire circle of the ecliptic just described. The sun itself is represented by a small circle attached to the rim of this meridian, the sun's centre being defined by a chord or wire bisecting this small circle into two hemispheres. Another and very conspicuous appliance is a double ring permanently fixed round the globe at right angles to the ecliptic, and representing the dividing limit between sunlight and darkness. The space between the two parallel rings is eighteen degrees wide, and represents the zone of twilight adjoining the hemisphere of sunlight. Another appliance is a brass semicircle revolving round the sun's centre. This extends ninety degrees on each side of the sun's centre, and consequently extends half way round the earth; it is divided or graduated into degrees for the purpose of measuring the sun's zenith distance. The last appliance to which

attention need be called is a graduated hour-circle placed around the south pole. This is divided into hours of time, and also into 360 degrees. The globe itself is, of course, mounted so that the axis is inclined to the plane of the ecliptic at the normal angle of $23^{\circ} 30'$.

The inventor claims that his new method of mounting the globe enables the student to solve a number of problems in astronomical geography, which are quite insolvable by any other globe at present in use. Among these problems may be mentioned the following:—The sun's declination and its place in the ecliptic on any day in the year; the place where it is vertical at any given moment; all places where it is vertical on any given day, and the two days in the year on which it is vertical over any place within the tropics; the sun's altitude at noon, and its times of rising and setting, at any place on any day; the time when the sun begins to shine constantly, the period during which it so shines, and the days on which it never rises, at any place in either of the frigid zones; the time when twilight begins and ends on any day at any place; and all places at which an eclipse of the moon is visible. The problems for the solution of which the globe, as ordinarily mounted, is adapted, can also be readily worked out by the new globe.

We confidently recommend "the Turnbull Globe" to the notice of teachers and students, and of all others interested in the study of astronomical geography. It should find a place in every well-furnished library and schoolroom.

The globe is for sale, at very reasonable prices, according to size, at the bookstore of Messrs. Willing & Williamson, King Street East, Toronto. A circular, giving full instructions as to the method of using it, is presented with each globe sold.

ANSWERS TO CORRESPONDENTS.

J. C. C.—You will find some specimens of Alliterative verse, as well as of doggerel Latin, such as you are seeking for, in Morgan's "Macaronic Poetry," New York, 1872.

We transcribe for you translations of three of the Nursery Rhymes, and append the modern scientific paraphrase of "Twinkle, twinkle, little star," of which you have not the correct rendering.—ED. C. E. M.

John, John, ye Piper's Son.

Johannes, Johannes, tibi sine natus
Fugit pernicious porcum furatus,
Se3 porcus voratus, Johannes delatus,
Et plorans per vias est sur flagellatus.

Humpty, Dumpty.

Humptie Dumptie pendait au mur
Humptie Dumptie tomba si dur,
Ni tous les cheveux, ni les hommes du Roi
Mettront Humptie Dumptie comme autre fois.

Twinkle, Twinkle, Little Star.

Mica, mica, parva stella
Miror, quænam sis tam bella !
Splendens emius in illo
Alba velut gemma, cœlo !

Wrinkles, wrinkles, solar star,
I obtain of what you are,
When unto the noonday sky
I the spectroscope apply ;
For the spectrum renders clear
Gaps within your photosphere,
Also, sodium in the bar
Which your rays yield, solar star.

AT the Teachers' Convention of the County of Halton, held recently at Oakville, Mr. Robert Little, of Acton, Public School Inspector, was presented by the members of the Association with a valuable gold watch, in token of their recognition of his long and conscientiously-performed labours as Inspector of the county. To this doubtless gratifying evidence of appreciation and good-will, on the part of the teachers of Halton, we would add our humble tribute of commendation and praise. Mr. Little is a faithful labourer in the educational vineyard, and deserves well of the profession, which he adorns by his talents, and by the labours of authorship which modesty prevents him from avowing to the world, and thereby claiming that recognition and honour which are abundantly his due.

MESSRS. W. STEWART & CO., London, have just issued in a handy volume, "a coach" to "London University Matriculation Examination," intended for private students, containing full information on all points connected with the Examination, with a complete set of questions and answers, and comprehensive lists of text-books in the different subjects examined on. The plan of the book is excellent, and it cannot fail to prove instructive not only to students reading up for pass or honours in London University, but for any Collegiate course whatever.

MR. RICHARD GRANT WHITE contributes a paper to the November number of the *North American Review* on what he characterizes as "The Public School Failure" of the United States. It is to be hoped that Mr. White is prepared for a terrific onslaught from the defenders of the Public School system of his countrymen, as in nothing else are Americans more restive under criticism than in matters educational and scholastic. If the critic treads on safe ground as to his facts he is to be commended for the courage which inspires the expression of his opinions.

MESSRS. T. NELSON & SONS, Edinburgh, have done good service to teachers-in-training, in the preparation of a work entitled "Model Notes of Lessons," covering the ground of ordinary elementary instruction, in reading, writing, and arithmetic; object lessons; history and geography; grammar and analysis. The work is executed with judgment and ability, and will prove of extreme value to those who desire to freshen their methods of teaching and add attractiveness to school work.

THE Earl of Roseberry, Lord Rector of the University of Aberdeen, in an address recently delivered to the students in Marischal College, made an urgent appeal for the establishment of a Chair of Scottish History at the University over which he presides. When will Mr. Crooks make it possible to institute a Chair or even a Lectureship of Canadian History at our National University?