

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/
Comprend un (des) index

Title on header taken from: /
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

Vol. I. No. 10.

OCT., 1881.

{ \$1 per annum.
10 cts. per No.

THE
EDUCATIONAL RECORD

OF THE
PROVINCE OF QUEBEC,

PUBLISHED MONTHLY, UNDER THE AUTHORITY OF THE PROTESTANT COMMITTEE OF
THE BOARD OF EDUCATION, AND CONTAINING THE OFFICIAL
ANNOUNCEMENTS OF THE BOARD.

EDITED BY R. W. BOODLE.

CONTENTS :

	PAGE
Proceedings of Protestant Committee of Council of Public Instruction.	411
British and Canadian School, Montreal. V..... <i>Dr. Robins.</i>	415
Outlines of English Literature. V..... <i>Professor Moyse.</i>	419
Primeval Centres of Language..... <i>Editor.</i>	425
Development of Human Intelligence.....	427
Statistics of Protestant Academies and Model Schools	430
Examination Papers for Academies and Model Schools.....	434
Evening Lectures and Classes.....	440
Educational Topics—Religion in Schools.....	440
Boarding and Day Schools.....	442
Reviews—Hardy's Quaternions.....	446
Andrew's Hamlet.....	447
Miles's History of Canada. New Edition.....	448
Wentworth's Algebra.....	449
Notes and News.....	451
Correspondence—Mathematical Education..... <i>C. W. Parkin.</i>	454

MONTREAL:
GAZETTE PRINTING COMPANY.

1881.

CANADA LIFE ASSURANCE COMPANY.

ESTABLISHED 1847.

HEAD OFFICE, HAMILTON, ONT.

Capital and Funds, OVER 5,000,000 DOLLARS.

Annual Income about \$850,000.

MANAGING DIRECTOR AND PRESIDENT:

A. G. RAMSAY.

SECRETARY:

R. HILLS.

SUPERINTENDENT OF AGENCIES:

J. W. MARLING.

ABSTRACT.

1. Assets 30th April, 1880.....	\$4,297,852
2. Income for the year ending 30th April, 1880. 5.....	835,853
3. Income (included in above) for the year from interest and profit on sale of Debentures.....	243,357
4. Claims by death during the year.....	182,948
5. Do. as estimated and provided for by the Company's tables.....	296,878
6. Number of Policies issued during the year—2107, amounting to.....	3,965,062
7. New premiums on above.....	111,382
8. Proposals declined by Directors—171—for.....	291,200
9. Policies in force 30th April, 1880, 12,586, upon 10,540 lives.	
10. Amount assured thereby.....	21,547,759
11. Death claims fell short of expectation by.....	103,930
12. Interest revenue exceeded Death claims by.....	50,309

1880 versus 1850.

The Assurances now (1880) in force are **twenty-five times** greater, the Annual Revenue **thirty times**, and the Total Funds **one hundred times** greater than in 1850.

New business last year exceeded that of the six other Canadian Companies combined—that of the five Licensed American Companies combined, and was more than double that of eleven British Companies combined.

The CANADA LIFE carries over a fourth of all the existing business in Canada.

The bonus additions to Life Policies during the past 15 years have added \$375 to every \$1000 of original assurance and this now stands at \$1375 and will be further increased at each future division of profits.

During the same period 35 to 39 per cent. of all premiums paid were **returned in cash** to those preferring this mode of distribution, according to age say 40 and 20 years, when policy was issued.

Montreal Branch, 180 ST. JAMES STREET.

B. POWNALL,

Sec. for Province of Quebec.

P. LA FERRIÈRE,

Inspector of Agencies.

JAMES AKIN, Special City Agent.

AGENCIES THROUGHOUT THE PROVINCE.

THE
EDUCATIONAL RECORD
OF THE
PROVINCE OF QUEBEC.

No. 10.

OCTOBER, 1881.

VOL. I.

PROCEEDINGS OF THE PROTESTANT COMMITTEE OF
THE COUNCIL OF PUBLIC INSTRUCTION.

EDUCATION OFFICE,
QUEBEC, 7th September, 1881.

Which day the quarterly meeting of the Protestant Committee of the Council of Public Instruction was held. Present: Dr. Cook, Dr. Dawson, C.M.G., R. W. Hencker, Esq., D.L.C., Dr. Mathews, and the Hon. the Superintendent of Public Instruction.

In the absence of the Chairman, Dr. Dawson was requested to take the Chair.

The minutes of the former meeting were read and confirmed.

The Secretary read a letter from Dr. Mathews intimating his acceptance of his appointment as an associate member of the Protestant Committee of the Council of Public Instruction, and expressing his satisfaction with the honour done him.

The Hon. the Superintendent of Public Instruction reported that there had been some correspondence with the Dominion Government in regard to the payment of the arrears of Marriage License Fees and that the matter was still in abeyance.

The Committee requested the Hon. the Superintendent of Public Instruction to respectfully recommend His Honour the Lieutenant Governor in Council to establish a Protestant Board of Examiners at New Carlisle, Co. Bonaventure, and that Martin Sheppard, Esq., Rev. Thomas Blaylock, New Carlisle; John Le Grand, Esq., New Carlisle; Rev. Peter Lindsay, New Richmond;

and Rev. Mr. Brown, Shigawake, be appointed members of the said Board of Examiners, recommended to be established at New Carlisle, County Bonaventure.

The special Report of Mr. Inspector McLaughlin on the Model School at Philipsburg was laid before the meeting.

The Hon. the Superintendent of Public Instruction stated that circulars had been sent to all the School Inspectors of the Province of Quebec, requesting them to forward to the Department of Public Instruction the Post Office addresses of all the Protestant Schools within their respective Districts of Inspection. The Secretary was instructed to forward said Lists of Protestant Schools as soon as obtained to the Sub-committee on "THE EDUCATIONAL RECORD."

The gentlemen recommended at last meeting had been appointed members of the Boards of Examiners as follows, viz. :—Dr. J. B. Harrington, in the Board of Examiners, Montreal ; Rev. Wm. Ross Brown, in the Board of Examiners for the District of Bedford, and Rev. F. M. Dewey, B.A., in the Board of Examiners, Richmond.

The Hon. the Superintendent of Public Instruction reported that nothing had as yet been done in regard to the School Assessment on Price's Mills, Metis.

In answer to a letter from Mr. Gerald H. Brabazon, Secretary, Board of Examiners, Pontiac, inquiring whether Protestant candidates for Teachers' Diplomas might not be examined orally, and in February and August as well as in May and November, the Secretary was instructed to state that all Protestant candidates for Teachers' Diplomas must be examined as directed in the amended regulations, viz., by written examinations and at the meetings of the Boards of Examiners in May and November only.

The Secretary was directed to reply to a letter from Mr. W. M. H. King, President, Board of Trustees, St. Sylvester, enquiring whether the Model School there would receive the Common School Grant as well as the grant from the Superior Education Fund, that said Model School was entitled to its share from the Common School Grant as a dissentient Elementary School.

A letter was read from Rev. D. W. Morison enquiring whether the Village of Ormstown might not be erected into a separate municipality for School purposes, and the Secretary was instruct-

ed to say in reply that the matter must be referred to the Hon. the Superintendent of Public Instruction.

Dr. Mathews' name was ordered to be added to the Sub-committee of conference with the Government on the proposed new School Law.

On the motion of R. W. Heneker, Esq., seconded by Dr. Cook, it was unanimously resolved :—

“That Edward T. Hemming, Esq., D.C.L., of Drummondville, be appointed a member of the Protestant Committee of the Council of Public Instruction under sec. 15 of the Act 39 Vic., cap. xv.”

The Report of the Sub-committee on the proposed New School Law was submitted by the Chairman, R. W. Heneker, Esq. He was requested to send copies of the Report to each member of the Committee, for their criticisms. Should the opinion of the members of the Committee be in accord with the views of the Sub-committee, the Chairman was authorized to publish the Report in the public press with the view of eliciting discussion on the subject.

The Secretary's statement of account shewing a balance in bank of \$1,749.45 was examined and found correct.

The Secretary's account for contingent expenses amounting to \$4.29 was ordered to be paid.

On the motion of R. W. Heneker, Esq., seconded by Dr. Mathews, it was unanimously resolved :—

“That the Inspectors of Academies be paid \$250 each and their expenses, if approved by the Chairman.”

The revenue from Marriage License Fees for the past year amounted to \$5,800, after deducting \$200 for management. Of this sum \$5,000 were appropriated to University Education, as follows :—

McGill University.....	\$2,500 00
Morrin College.....	1,250 00
University of Bishop's College, Lennoxville....	1,250 00
	<hr/>
	\$5,000 00

The balance of the Marriage License Fees amounting to \$800 being added to the Protestant portion of the Superior Education Grant for the year, viz., \$9,980.13, gives a total of \$10,780.13 for distribution at this meeting.

The Committee, after carefully examining and considering

the reports and returns of the Inspectors of Academies and Model Schools in connection with the annual returns from the different educational institutions for superior education, agreed to recommend the payment of the following sums annexed to each.

UNIVERSITIES AND COLLEGES.

McGill University.....	\$1,650 00
Morrin College.....	500 00
St. Francis College, Richmond.....	1,000 00
University of Bishop's College, Lennoxville....	1,000 00
	<hr/>
	\$4,150 00

ACADEMIES.

Class I.

Huntingdon.....	\$600 00
Lachute, Argenteuil.....	600 00
Stanstead and W. Ladies' College.....	600 00
Compton, Ladies' College.....	400 00
Coaticooke, Stanstead.....	400 00
*Sherbrooke.....	400 00
	<hr/>
	\$3,000 00

Class II.

Bedford, Missisquoi.....	\$300 00
Granby, Shefford.....	300 00
Shawville, Pontiac.....	250 00
Berthier-en-haut.....	200 00
Waterloo, Shefford.....	200 00
Inverness, Megantic.....	200 00
Knowlton, Brome.....	200 00
St. Johns, St. Johns.....	150 00
	<hr/>
	\$1,800 00

Class III.

Thurso, Ottawa.....	\$150 00
Eaton, Compton.....	150 00
*Sweetsburg, Missisquoi.....	150 00
Dunham, Missisquoi.....	150 00
*Danville, Richmond.....	100 00
Hatley, Stanstead.....	100 00
	<hr/>
	\$800 00

MODEL SCHOOLS.

Class I.

Clarendon, Pontiac.....	\$ 75 00
*Valleyfield, Beauharnois.....	75 00
Hull, Ottawa.....	75 00
La Pêche, Ottawa.....	75 00
Clarenceville, Missisquoi.....	75 00
	<hr/>
	\$450 00

Class II.

Cowansville, Missisquoi	\$ 50 00
*St. Henri, Hochelaga	50 00
*Lachine, Jacques Cartier	50 00
St. Sylvester, Lotbinière	50 00
*Chelsea, Ottawa	50 00
Rawdon, Montcalm	50 00
Marbleton, Wolfe	50 00
Phillipsburg, Missisquoi	50 00
Cookshire, Compton	50 00
Mausonville, Brome	50 00
Hamden, Compton	50 00
*Aylmer, Ottawa	50 00
Lacolle, St. John	50 00
Magog, Stanstead	50 00
*Grenville, Argenteuil	50 00
St. Lambert, Chambly	50 00
Ulverton, Drummond	50 00
	\$850 00

[The Institutions marked thus (*) not having sent the annual returns to the Department of Public Instruction will be paid the grants made to them after the November meeting of the Committee, only if such returns be in the meantime duly sent in.]

Total amount voted for Superior Education was \$16,050, being in excess of revenue, \$269.87.

There being no further business, the Committee adjourned to meet on Wednesday, the 30th November next, or sooner, if necessary on the call of the Chairman.

GEORGE WEIR,
Secretary.

THE BRITISH AND CANADIAN SCHOOL, MONTREAL.

A CHAPTER FROM THE EARLY HISTORY OF POPULAR EDUCATION IN THE PROVINCE OF QUEBEC.

(Concluded.)

A monitorial system of instruction must of necessity to a certain extent be a training of teachers. But because the ordinary monitors were frequently changed, because the duties expected of them were chiefly mechanical, and because they were intended to subserve a merely temporary purpose in the school, those who in this lower capacity, took part in the management of the school, did not thereby gain much skill in government, nor very valuable experience in teaching. Yet opportunity was afforded for the

display of a certain natural aptitude for controlling others which is a most valuable quality in the teacher, and so masters of monitorial schools were guided in the choice of promising pupils to be raised to the position of general monitors, and then to that of masters or mistresses. The monitors of higher grade in these schools received special instruction out of the ordinary school hours by the master of the school, in order that they might be prepared for the more effectual performance of their special duties. This method which developed into the pupil-teacher system of the English Common Schools, undoubtedly did much for popular education before the general establishment of Normal Schools provided a better means of training teachers for their work.

The desirability of providing teachers for "the Canadas" was continually before the minds of the managers of the British and Canadian School. They aimed not merely to benefit the city of Montreal by maintaining a good school here, and to aid indirectly by the light of a good example other parts of the provinces, but to afford direct assistance by supplying persons trained as school-masters to take charge of new schools. The manner in which this was done to supply a military school and an Indian school has been already detailed. But these instances were exceptional. The intention of the promoters of the British and Canadian School was to give a prolonged training to pupils of the school itself, who, becoming thoroughly versed in its methods and imbued with its spirit, should carry the benefits of education into other localities.

In an early letter applying for help to the British and Foreign School Society in England, the indefatigable Secretary says:—

"His Excellency the Earl of Dalhousie is expected to be in Montreal early in the summer, when we intend to wait on His Lordship to invite him to visit the schools, with which I am sure he will be highly pleased, and to state to him that it is our object to build a school-house for 400 boys and 200 girls, and to train up young persons of both sexes to supply public schools throughout Canada with well-instructed teachers; and for this purpose to suggest to His Excellency the propriety of recommending the system of teaching to the Provincial Legislature to be adopted throughout Canada. Yesterday a letter was received from the parent of two children who attend the school, expressing his grateful thanks for the improvement made by them in learning, and his regret at being obliged to leave the place where such an opportunity is afforded for the education of poor children. One

of them, a girl of 12 years old, being very active, interesting and good, has since been taken under the care of the ladies to be instructed and trained for a teacher, should she be spared."

At the first anniversary meeting of the Society after the reception of the report—

"On a motion of John Boston, Esq., seconded by D. Fisher, Esq., it was resolved unanimously:—

"That this institution shall maintain a school on an extensive scale to educate children, and that it shall train up and qualify young persons of both sexes to supply well-instructed teachers to the inhabitants of Canada, as shall be desirous of establishing schools on the British system."

I cannot indeed discover that this well-intended scheme resulted in the accomplishment of noticeably great direct results. If the personal history of the elder race of country school-teachers were known, it might appear that some of those who, during the last half century, have laboured in poverty and obscurity for the public weal in the humble and unregarded position of teachers, received their first impulses towards the occupation of their choice in the British and Canadian School. It is, however, highly probable that almost if not quite all the more promising pupils of the school turned to the many more profitable employments that the rapid development of a new country offered. It cannot be doubted, however, that the germinal thought of the need of special professional preparation for teachers was sown in many minds, and developed at last into the demand for the establishment of Normal Schools, which, by the efforts of Sir Edmund Head, Dr. Dawson and the Hon. Mr. Chauveau, met answer in the founding of the three Provincial Normal Schools—the Laval, the McGill and the Jacques Cartier Schools—in 1857.

The school attracted the attention of many visitors. The visitors' book of the girls' school has been just discovered. The first name entered under date February 1st, 1823, is that of Mrs. Torrance, the second, on the same day, that of Mrs. Frothingham. The first name in succession to these ladies and the last name under date July 4th, 1864, is that of its long-tried friend, Wm. Lunn. Between the first and last entries occur the names of many prominent citizens of Montreal, of some men of provincial reputation, and of others who challenge still wider recognition. The Earl of Dalhousie has twice signed the book, and the Countess once. The Earl expressed himself as "very much gratified by

the numerous attendance, the cleanliness and perfect order in all the arrangements," and again as "very much pleased." Neal Dow, of Portland, Vt., is "much surprised at the intelligence of the Misses, and the promptitude with which they answer difficult questions." Judge McCord's comment was as follows: "Was highly pleased with the examination of the children in the explanation of the Scriptures, and think it would have done honor to a candidate for Holy Orders." Chief Justice Sewell was "very much pleased with the excellent order and regulations of the school." Joseph Lancaster signs himself Founder of the Royal Lancasterian System of Education, and says (*literatim*) "My pleasure and satisfaction in visiting this useful and very hopeful school, and unite in my decided approbation of the school; and the teachers' conduct, my best wishes for the prosperity and happiness of Both." Later he says "'all's well that ends well,'" and December 22nd, 1829, he writes "much gratified with the pupils and the industry of the teachers."

In addition to the usual amount of pious, congratulatory and laudatory prose, with a few lines of excruciating poetry, there are evidently discriminating remarks by careful observers, from which it appears that the scholars very generally excelled in needlework, writing and scriptural knowledge, and that the strong point of the school was its good mechanical discipline. It is further evident by an inspection of the book that then, as now, there were a good many persons who liked to play at philanthropy, leaving the actual toil of the work to a very few conscientious and self-devoted workers. Mrs. Frothingham complains that ladies do not attend the monthly meetings, and records her opinion that "those ladies who have carriages should be fined double." Her complaint is echoed by Miss Gates and Miss Jones, and again by Mrs. Harwood and Miss Bancroft.

The attendance at the school was fluctuating. Several visitors lament the smallness of the numbers, while others rejoice over the flourishing condition of the school. Doubtless the work of these pioneers of education, like that of their successors, was sometimes heavy with disappointment, sometimes bright with encouragement. On the whole, amid many disadvantages they laboured with a cheerful, hopeful spirit and supreme loyalty to duty. From the scene of their labours all but one of the early projectors of the British and Canadian School Society have de-

parted. The names of many of them are household words in this city, for they in many ways built wisely, while laying the foundations of its social, educational, religious and commercial prosperity. Let us hold their memories sacred. One in a green old age, still vigorous and active in educational matters, standing erect under the burden of more than four-score years, looks back, not without a laudable pride, upon events that shaped our destinies before the men of this generation were born. May he be long spared to see yet richer and more abundant fruit of the labours of his youth and early manhood. And when at last the sole remaining link that binds us to the early days in which we have been looking back shall be broken, and William Lunn shall have been borne to his long repose, may we who must then carry on his work emulate the single-mindedness and earnest industry with which his protracted efforts in the cause of humanity have been adorned.

OUTLINES OF ENGLISH LITERATURE.

No. V.

BY CHAS. E. MOYSE, B.A.

Cymric Literature. The Gododin.—The Cymric literature of Great Britain, although vast in bulk and of diverse character, has for a nucleus a good representative poem, perhaps its most famous production as well, entitled *Y Gododin*, or *The Gododin*. The subject of the *Gododin* is one in which the Celt revelled—warfare. Just above the first stanza are written the lines :

“ This is the *Gododin*.
Aneurin composed it.”

Partly on this evidence the *Gododin* was until lately regarded as a literary whole, and as Aneurin's work, (sixth century). An acute Celtic scholar, Edward Davies, acting on this supposition brought forward an ingenious theory that the poem referred to the well-known but traditional massacre of the British at Stonehenge by the followers of Hengist when that chieftain was recalled by his son-in-law Vortigern. The British would not brook the over-lordship of the Jutish leader, and accordingly a conference was held, which was summarily ended by Hengist's shout, *Nimath eowre seaxas*—take your knives. Of the British

three hundred, all save Vortigern himself fell to the ground dead. Later investigation goes to show that the Gododin can be divided into two very nearly equal parts. The first forty-four stanzas are the possible handiwork of Aneurin; the remainder is added by a subsequent writer or writers, with a touch strikingly Saxon in its directness and realistic force. Stanza forty-five speaks of Aneurin in the tomb:

“ Under foot for a while
My knee is stretched,
My hands are bound.
In the earthen house,
With an iron chain
Around my two knees.”

When the strain is carried on in after time, Aneurin is *conventionally* called to the world once more:

“ From the dismal earthen prison he brought me out,
From the place of death, from a hostile region.”

Each of the two parts of the Gododin refers to a battle. In the first part the combatants come from many localities. On the one side fought the Pictish host of Gododin and their allies the men of Deivyr and Bryneich (the Welsh names for Deira and Bernicia), in part Saxons. This army, so the poem tells us, marched to a district named Gododin. On the other side were arrayed the Britons and Scots, who collected at the fort of Eidyn, whence they marched to a district adjoining Gododin, by name Catraeth. The leaders of the latter army are enumerated, of whom the most important is called *Mountaineer*. His retinue had “ blades white as lime,” and probably numbered three chiefs and three hundred. Next is mentioned a body called the Brython, “ three heroes and three-score and three hundred ”; then a group of chiefs with their clans.

The strife was of the keenest. One doughty British warrior “ would give no quarter wherever he pursued ”; he hewed down men like rushes; his attack was “ like the rush of the eagle into the sea when allured by his prey ”: his ranks smote the battalions of Deivyr and Bryneich grievously, so that they uttered groans, and one hour saw seventy thousand of them laid low. The din of the shields was like thunder, and splintered shields were left about the ground. With imagination altogether Celtic the bard in one place beats out his music thus:

“ He would slaughter with a variegated sword from a furze-bush ;
As when a company of reapers comes in the interval of fine weather
Would Marchleu cause the blood to flow.”

Ossian laments that his people went out to the war but always fell; the same note is heard here. All the retinue of Mountaineer were slain; their chieftain alone escaped. The twenty-first stanza describes the disastrous fate of the Brython :

“ The men went to Catraeth; they were renowned;
Wine and mead from golden cups was their beverage;
That year was to them of exalted solemnity;
Three warriors and three score and three hundred wearing the
golden torgue.
But three escaped by the prowess of the gashing sword;
The two war-dogs of Aeron and Cenon the dauntless,
And myself (*Aneurin*) from the spilling of my blood, the reward
of my sacred song.”

This has been turned into English rime by Thomas Gray (1716-1771), in an Ode from the Welsh, part II. (The Death of Hoel) :

“ To Catraeth's vale in glittering row
Twice two hundred warriors go;
Every warrior's manly neck
Chains of regal honor deck,
Wreathed in many a golden link;
From the golden cup they drink
Nectar that the bees produce,
Or the grape's ecstatic juice.
Flushed with mirth and hope they burn;
But none from Catraeth's vale return,
Save Aeron brave and Conan strong,
(Bursting through the bloody throng),
And I, the meanest of them all,
That live to weep and sing their fall.”

A word now as to identification of persons and of site. The leader whose Welsh name means Mountaineer, a good Celtic authority, Mr. Skene, (*Four Ancient Poems of Wales*), to whom I am indebted for the gist of the explanation of the Gododin, maintains to have been Aidan, King of the Scots of Dalriada. Dalriada was a kingdom to which modern Argyleshire nearly corresponds. It is famous as having been the only power beyond the line of the Clyde and Forth which preserved independence of the Picts who occupied all the broad territory to the north and east. Eidyn, the place of muster, Mr. Skene connects with the Edin of Edinburgh, and Careden, the fort of Eidyn, where the Roman wall meets the Forth. We may suppose, then, the battle to have been fought at Caredin, “ in that part of Scotland where

Lothian meets Stirlingshire, in the two districts of Gododin and Catraeth, both washed by the sea of the Firth of Forth." Its date is A. D. 596.

The second part of the Gododin is in some degree borrowed from another famous Welsh bard, Taliesin (Splendid Forehead), who lived in the sixth century. It describes the death of Domnal Brec, also a king of Scottish Dalriada. In the *Annals of Ulster* one reads "A. D. 611, Domnal Brec in fight at Straith Cairinn (Strathcarron) towards the end of the year in December was slain by Hoan, King of the Britons, and reigned fifteen years." Strathcarron is the upper part of the river Carron, which rises in the Fintry Hills, and in the parish of Fintry Mr. Skene discovers a knoll in all likelihood "the headland of Adoyn," from whose summit the poet beheld the contest.

We have now to consider the interesting generalities legitimately deduced from a story of the inner life of Celtic literature.

Vindication of the appearance of the Celt here; his character is the key to his literature. The spirit of Celtic literature.—I feel that this part of my subject is best approached by a few words in vindication of the Celt's appearance in the history of our Literature. The truth is that he has been ignored until lately. Open the ordinary text-book, and you are at once introduced to Jute and Saxon and Angle and told of Beowulf and of Cædmon's dream. But something comes before this. The Englishman is much more than Teuton plain and simple; contrast him with his comparatively pure neighbour the Hollander from whatever standpoint you please, and differences, which will be enlarged upon hereafter, rise to the surface. Some of these are derived from the Celt. Whether we follow the lines of that delightful book, Matthew Arnold's "Study of Celtic Literature, written in a style of peculiar grace and charm, or range ourselves with thinkers whose views are not so far-reaching, the Celtic element in literary English is sometimes patent to all observant readers. It does not fare with Literature as with history. Were the groundwork of English polity discussed, the matter would assume a very different aspect. The Teuton glorying in an idea of primitive equality, based on the temporary possession of land, is the core of our constitution, or rather its heart whence its life-blood still pulses. This point is important. It explains why such expositions as Mr. Freeman's

lectures on the Growth of the English constitution and Prof. Stubbs' profound and exhaustive work on the same subject leave the Celt almost untouched. The primitive Teutonic principle, its former extent, its present traces,—in Switzerland, for instance, and in India,—its growth by mediæval accretion do not needfully ask for either Cymry or Gael. When, however, we consider not the practical legislation but the mental composition of a nation, we must extend our ken. We have moved along paths somewhat different from Matthew Arnold's, but we reach his main proposition, on which the previous remarks throw a side-light of their own.

“And we then, what are we? what is England? I will not answer, A vast obscure Cymric basis with a vast visible Teutonic superstructure; but I will say that that answer sometimes suggests itself, at any rate,—sometimes knocks at our mind's door for admission; and we begin to cast about and see whether it is to be let in.”

The mental structure of a man gives the tone to his writing, and the mental structure of the Celt is based on emotion. His fibres are finer, and withal strung more tightly than those of the plodding, tenacious, purposeful Saxon. Ecstasies and despairs are his moods; he seems to know no mean. Being emotional he rejoices over his Saxon supplanter in that he has an element which the other lacks—imagination. Being imaginative he may, under certain conditions, create the excellent in art and in literature and is at bottom a poet. I must not allow warmth of interest to lead me on to speak of the essentials of that filmy-natured thing, poetry, but let us dismiss from our minds the idea that it is what Aristotle calls a Mimetic art. The poet is not an imitator in essence; he is a maker, an inventor. Did he merely imitate he would be compelled to be rigid, but, as it is, he changes his fancy and its expression as he pleases. He may make men speak as they never did or never could have spoken. Only for descriptive poetry in a certain restricted sense—narrative is Francis Bacon's term for what I mean—can imitation be claimed. The bias towards the concrete displayed in Aristotle's verdict, the English philosopher just mentioned was free from feeling, and Shakespeare, *the poet of true insight*, struck the same chord in verse as his illustrious contemporary struck in prose. Poesy (*poesy* is the art, *poetry* its outcome) refers to man's imagination, says Bacon in one place, and repeating the statement elsewhere he adds that imagination

is not tied to the laws of matter, but "may at pleasure join that which nature hath severed and sever that which nature hath joined, and so make unlawful matches and divorces of things." Shakespeare sums up the whole at a stroke :

"The lunatic, the lover and the poet
 Are of imagination all compact ;
 And as imagination bodies forth
The forms of things unknown, the poet's pen
 Turns them to shape and gives to airy nothing
 A local habitation and and a name."

M. N. D. (Act V, Sc. 1).

Artist as he was, the Celt failed to achieve greatness in art generally. His feelings swayed him so readily, that the moderation of the Greek, a man with very much the same emotional endowments, could not lead him to high places ; neither could he move with the calm, hum-drum step of the German, who untiringly brings every task to completion. Proud, impatient of fact and of rule, with energy fervid in some cause but never holding to the same cause long, at once generous to a fault, yet loath to forgive injury, he presents the spectacle of one who with many truly noble elements cannot make the best of them. These points Mr. Matthew Arnold has worked out in some detail—not always rightly I think—and as a commentary on them, Tennyson's "Voyage of Maeldune," to some extent borrowed, as most of Tennyson's best work is, but at the same time faithfully reflecting Celtic sentiment and form, may be read with profit. "It is but one step from the sublime to the ridiculous," said Napoleon, very much as Thomas Paine had said before him, and somehow the mind leaps from these high matters to the wish of the Irishman regarding his coat-tail. The impulses of the pure Celt lead him towards fighting, not towards the patience of calm discussion but considering him from a literary standpoint, he has qualities which throw the pure Saxon into the shade.

We pass on to consider the artistic excellence of the Celt other than literary, and, secondly, the merits of his literature.

Newspapers in the United States.—From one of the *bulletins* of the United States Census Report, it appears that the total number of daily papers published in the United States is 962, of which the larger half appear in the evening. Connected with them are 682 weekly issues. The average circulation is only 2,800 copies. Of the total, eighty-one are printed in German, and nine in other foreign languages. *The Academy.*

PRIMEVAL CENTRES OF LANGUAGE.

A PHILOLOGICAL NOTE.

This short note is suggested by a remark which will be found on another page of the RECORD. The writer there asserts that the study of the classics will bring about "increased facility for learning modern languages with their construction and etymology, and the *demonstration of their convergence towards those three great currents which perhaps had their source in Babel.*" With the former part of this statement the present note has nothing to do. I am simply concerned with the implication of the latter part that the study of philology tends to the conclusions, (1) that there were three original families of speech; (2) that these three families may possibly have had their origin in one language. Such conclusions are very far from being those of the latest philologists. Those who may wish to pursue the subject further I would refer to A. H. Sayce's "Principles of Comparative Philology," published in 1875, and specially to the third chapter of the work, entitled "The Idolum of Primeval Centres of Language." Meanwhile a short statement of conclusions will be useful.

Early classifications, starting from the fact attested by the authority of Scripture that all mankind were descended from the three brothers, Shem, Ham and Japhet, divided languages into three families entitled, Shemitic, Hamitic and Japhetic, and such names are still to be found in such unscientific works as Canon Rawlinson's edition of Herodotus. By degrees, however, as these names were connected with misleading associations, the two latter were superseded by other names. *Shemitic* survived as *Semitic*, and *Hamitic* was changed into *Turanian*, while *Aryan*, *Indo-European* or *Indo-Germanic* superseded *Japhetic*. Into the etymology of these words it is hardly necessary to enter here, but "*Turanian*" means nomad and "*Aryan*" was the name of the Persians of *Iran*. The *Turanian class* was, of course, regarded as a *family*, a term which is only true of the *Aryan* and *Semitic* classes, because the languages that compose these classes show affinity with one another (though no connection has yet been shown between the classes themselves). And when the "*Turanian family*" had been invented, everything that was not *Aryan* or *Semitic* was thrust into it, "from

Turkish and Tamulian to Chinese and Red Indian." Later on the intension of the term "Turanian" was deepened at the expense of its extension, and it was confined to the Finnic, Tartar and Mongolian groups, to which some think that Basque should be added. Upon this a new class was called into existence called Allophylian—a term that merely concealed the fact that there were many languages such as Egyptian and Etruscan, the affinities of which it had been found impossible to discover, and which accordingly it was thought convenient to class together.

As the question now stands we may say that there are three families of languages (*i.e.*, classes of languages between the members of which it is possible to see linguistic relationship), called Aryan, Semitic and Turanian, and, besides these, numerous groups like the Papuan and individual languages like the Etruscan, which it is impossible to class scientifically. "When we consider," writes Mr. Sayce, "the great antiquity of man . . . our sole wonder must be not at the diversity of languages, but at the paucity of the wrecks of ancient speech that still remain spread over the face of the earth. The modern races of mankind are but the selected residuum of the infinitely various species that have passed away." Thus while the *older theory* of languages was that all people once spoke one language and that the present are merely variations of the original tongue, the *modern theory* is that the present are survivals of many different languages.

With Mr. Sayce's summary of results I will conclude my note: "Instead of maintaining the existence of a few original centres of speech, the truer view would be that languages at first were infinitely numerous and diversified, being the natural and spontaneous outcome of the powers, the feelings, and the needs of primitive man, just as much as the formation of flint tools or the ornamentation of sun-baked pottery, and that they have gradually diminished and disappeared through the course of ages by a long process of natural selection, civilization finally threatening them with utter extinction, and tending to reduce their number to the smallest possible cipher, if not finally to one universal medium of intercourse between man and man."

R. W. B.

THE DEVELOPMENT OF HUMAN INTELLIGENCE.

The increasing attention that is being paid to education as well as the spread of the scientific spirit into all branches of study have lately led to a fresh start in educational inquiry. "It may be well to remember," writes the *Educational Chronicle*, "that, as books, however important, are not the only instruments of education, so the learning of the letters is not the beginning of the education of a human being. This begins, in fact, as soon as the child is born, and it would tend to add much to the efficiency of educators to study the process and rewards from this point. No one can be an efficient educator who does not understand the nature of the human being whom he educates, and no one can understand this being who does not begin to observe and study him from the very first moment that he becomes observable." The subject has been taken up by the Department of Education of the American Social Science Association, and a circular has been issued which we commend to the notice of our readers :

"We have been made familiar with the habits of plants and animals from the careful investigations which have from time to time been published—the intelligence of animals even coming in for a due share of attention. One author alone contributes a book of 1000 pages upon 'Mind in the Lower Animals.' Recently some educators in this country have been quietly thinking that to study the natural development of a single child is worth more than a Noah's ark full of animals. Little has been done in this study, at least, little has been recorded. It is certain that a great many mothers might contribute observations of their own child's life and development that might be at some future time invaluable to the psychologist. In this belief the Education Department of the American Social Science Association has issued the accompanying Register and asks the parents of very young children to interest themselves in the subject:—

1. By recognising the importance of the study of the youngest infants.
2. By observing the simplest manifestations of their life and movements.
3. By answering fully and carefully the questions asked in the Register.
4. By a careful record of the signs of development during the coming year, each observation to be verified, if possible, by other members of the family.
5. By interesting their friends in the subject and forwarding the results to the Secretary.

6. Above all by *perseverance* and exactness in recording these observations.

From the records of many thousand observers in the next few years it is believed that important facts will be gathered of great value to the educator and to the psychologist."

This is followed by a series of questions, such as : At what age did the baby smile, recognise its mother, follow a light with its eyes, sit alone on the floor, creep, stand alone, walk alone, appear to be right or left handed, notice pain, as the prick of a pin, show a like or dislike in taste, appear sensible to sound, &c., &c. ?

We are able to add some notes written by Mr. F. H. Champneys upon the subject. These observations were made by him in the case of his infant son, extending from the moment of birth through the period of nine months. Mr. Champneys' observations are as follows :—

"*Crying* was performed at first without any squaring of the mouth. The sound can be exactly expressed by "nga" as pronounced in German. This must have been produced by closing the fauces by the contact of the pillars of the fauces and the soft palate, so as to send all the sound through the nose; the vowel sound being then produced by separating the soft palate and pillars of the fauces, and allowing the sound to come through the mouth. The child appeared to cry at first for three reasons : (1) from a feeling of loneliness or fright on awakening from sleep, which was relieved by being taken in the mother's or nurse's arms, or even by a touch; (2) from hunger; (3) from pain. The cries seemed to be all different in character.

Smiling was reported at 5½ weeks, but not certainly observed before the end of the 8th week. It was often accompanied by sucking movements. This shows the association of two pleasurable ideas.

Weeping.—Tears were shed two days before the end of the 14th week.

Seeing.—The eyes were first fixed on a candle when a week old. On the same day, the eyes were fixed on one of the parents for the first time. Opening of the eyes was accompanied by wrinkling of the skin of the forehead; the wrinkles, being horizontal, were due to the frontalis muscle. They resembled those produced in adults during an effort to open the eyes when tightly closed, either on account of very dazzling light or of a foreign body in the eye; but were probably only necessitated by redundancy of skin, which is very observable in a young child and most young animals. The wrinkling gradually ceased. The 9th day was the first on which anything like habitual opening of the eyes

occurred. It was not before the 14th day that the child *took notice* of persons or moving objects. From the time that he began to use his eyes, bright light gave him much pleasure, and he never blinked except on a change from comparative darkness to bright light; when the moment of this change was past, he would gaze for a long time with much apparent delight and with wide open eyes at a lamp or at the gas, however bright. This fact makes it unlikely that the frowning mentioned above was due to being dazzled. He was first able to see himself in the glass at eight weeks old, the experiment having been often used before.

Hearing.—During the first week the child would not start at any noise, however sudden, when unaccompanied by vibration of the room or bed. For instance, no notice was taken of hands loudly clapped close to his ear; but slamming of a door made him start. Just the same starting was observed immediately after birth when the scale in which he was being weighed went down with a jerk. It was very difficult to decide when the child really heard first. At 14 days old he would turn his eyes to his mother when she spoke to him, but even then did not start at sudden noises, however loud, unless accompanied by jerks or vibrations; so that the apparent power of hearing his mother's voice may have depended on his feeling her breath on his face, for it was only when her face was turned towards him while she spoke that he turned his eyes towards her. In connection with the late appearance of this sense, we must remember that the tympanum at birth is packed with areola tissue, which only gradually becomes absorbed after birth.

Reflex Actions.—Among these may be noticed the spasmodic start which occurred on any jar or vibration, previously noticed, and also the fact that micturition was always or nearly always indicated by a slight shiver. The slight provocation necessary for producing a convulsion in children is a well-known sign of their great irritability to nervous stimuli. Exactly at four weeks old the child started at sudden noises, if unexpected, but would not start twice at the same noise if not excessively loud.

Taste.—The child rejected all things given to him cold, even milk, but would take various things not especially nice (such as cod liver oil) if warm. The temperature seemed to be of more consequence to him than the taste.

Voluntary Movements.—The arms were far more purposive in their movements than the legs from the very first. The movements of the arms from the first were like those of striking with the fists, the fists, however, being only partially clenched.

Walking.—When one day less than nineteen weeks old, the trial was made of supporting the child on the floor with the feet just touching the ground, and moving him forward. The move-

ments of the legs were always alternate and purposive, each step being perfectly formed; though the feet were lifted unnecessarily high, there was no hesitation nor irregularity. Only when he was lifted too high for one or other foot to touch the ground was this alternate movement interrupted, the foot which failed to reach the ground making a fresh step. It was obvious that the contact of one foot with the ground was the stimulus for moving forward the other foot.

Attempts at Talking.—From nine months the child distinctly imitated the intonation of the voice when any word or sentence was repeated in the same way several times. About the 13th week he began to appear to attempt to join in conversation with a variety of inarticulate sounds, if talking was going on in the room.

Fear.—The first symptom of fear was noticed at about 9 months. It was excited by an unusual sound in the room, but not in the child's immediate neighbourhood; he opened his eyes very wide and burst out crying. The second occasion was at about 10 months, when sound was again the exciting cause; a toy was given him which squeaked on pressure; he burst out crying, and cried whenever it was offered him; but in a short time he got used to it, became very fond of it, and made it squeak himself."

TABLES OF STATISTICS OF PROTESTANT ACADEMIES AND MODEL SCHOOLS,

AS APPEARING PER THE RETURNS TO THE EDUCATION OFFICE, AND
REPORTS OF THE INSPECTORS OF ACADEMIES AND MODEL
SCHOOLS FOR THE EDUCATIONAL YEAR
ENDING 1ST JULY, 1881.

*Published under the sanction of the Protestant Committee of the
Council of Public Instruction.*

To secure as far as possible uniformity in the Examination papers, the mode of Inspection and the Returns, the Inspectors agreed to have from 10 to 20 questions written out on each subject—some elementary and easy, others more difficult—with appropriate marks attached to each. As many chirographic copies were thrown off as were deemed necessary in each branch. The pupils were allowed to answer four—any four, but not more than four of the set questions, and, in each paper, the marks attached to the four most difficult questions gave the maximum on any subject of

100. The questions were of such a nature as to give scope to all who knew anything of the subject to answer some of them. Under the group *English* are embraced, Dictation, Reading, Writing, History, Geography, Grammar. Under the group *Mathematics* are included Arithmetic, Algebra, Euclid, Drawing, Book-keeping and Physical Science while Latin and Greek comprise the *Classics*, and French and German the *Modern Languages*. It is the percentages or averages of these groups that are given in the last five columns. One great advantage attending the work of Inspection this year was that of an uniform set of Examination papers—which were given to all the Schools alike—each paper containing a sufficient selection of questions to suit the various attainments of the different grades of pupils.

The Inspectors state in their Reports that on the whole there is progress being made from year to year since the Inspection of the Academies and Model Schools began, in some important points notably so,—such as in History, Spelling, General proficiency, and even in the two branches complained most of in last year's Reports, viz: English Grammar and Classics, though in not a few cases, such Institutions are very far indeed from coming up to an approximation even to that which one could regard as Superior Education. Some ranking as Model Schools could hardly be considered as first class Elementary ones, while, if the test of a first class Academy be its preparing pupils to matriculate in some University, very few of them and these with not very many pupils could fairly be reckoned in that category.

The Committee in apportioning the grants to Academies and Model Schools have been guided by the Inspectors' Reports and Returns; by the annual Returns made to the Department, the elements of efficiency and numbers being thus both taken into account; and by the general circumstances of each Institution as stated in the Reports of the Inspectors.

The Committee have great satisfaction in referring to one very important improvement mentioned by the Inspectors, viz: that so many School Buildings have been put in a state of thorough repair, furnished with paragon desks and apparatus and appliances of different kinds for the comfort and convenience of the teachers and pupils.

TABLE No. I.—ACADEMIES.

	Latin	Greek	Geometry and Algebra	Trigonometry	English	Modern Languages	History	Geography	Physical and Natural Science	Book-keeping	Drawing	Agriculture	Classics	Mathematics	English	Modern Languages	Sacred History
Bedford	9	3	12	....	72	33	29	53	4	15	17	....	13	12	64	25	21
Berthier-en-Haut	13	....	4	....	25	23	23	27	5	16	27	....	35	42	51	53	51
Coaticooke	17	2	23	....	80	....	55	136	5	33	210	....	47	53	62	44	44
Compton, L.C.	....	....	8	....	45	31	45	45	13	7	30	....	65	36	67	50	61
Danville	No Return	....	....	....	....	....	....	....	....	....	....	....	45	29	55	71	27
Dunham	9	2	17	5	70	17	38	70	....	17	12	....	41	37	56	....	38
Eaton	4	....	9	....	44	9	24	44	....	10	....	....	37	66	60	40	71
Granby	....	....	10	3	108	3	72	108	....	36	36	....	Not in session wh'n vis'd				
Hatley	9	1	13	....	50	18	30	54	3	15	15	....	40	30	52	....	50
Huntingdon	23	7	37	....	80	20	60	75	19	27	75	....	43	46	67	58	60
Inverness	3	1	21	....	62	29	57	60	....	22	52	....	....	38	62	37	49
Knowlton	3	....	17	....	53	11	53	53	5	20	4	....	....	64	57	33	33
Lachute	23	5	39	....	135	47	45	115	....	15	5	....	36	34	67	41	47
St. Francis	23	12	35	8	77	40	85	77	20	35	25	17	32	32	56	44	46
St. Johns	7	....	5	....	22	10	20	21	....	11	8	....	39	40	53	41	39
Shawville	5	....	2	....	40	7	32	40	....	9	40	....	16	35	55	37	39
Sherbrooke	No Return	....	....	....	....	....	....	....	....	....	....	....	40	35	56	29	49
Stanstead	18	2	24	1	62	53	19	42	9	24	....	....	62	33	62	53	55
Sweetsburg	No Return	....	9	....	36	36	36	34	....	12	30	36	54	23	60	....	57
Thurso	4	....	....	....	198	18	110	185	....	28	....	....	....	20	47	13	58
Waterloo	18	5	32	....	....	....	....	....	....	....	....	12	33	36	61	46	41

Averages of Marks in each Group of Branches as per Returns of Inspection held on a certain day.
Maximum No. of Marks in each subject, 100.

Number of pupils in different Branches, as per Annual Returns.

TABLE No. II.—MODEL SCHOOLS.

	Latin.	Greek.	Geometry and Algebra.	Trigonometry.	English.	Modern Languages.	History.	Geography.	Physical and Natural Science.	Book-keeping.	Drawing.	Agriculture.	Classics.	Mathematics.	English.	Modern Languages.	Sacred History.
Aylmer	No	Return.											26	16	55		50
Chelsea	No	Return.	13	50	10	25	36								10	45	17
Clareville	9		11	28	11	28	28			11	40				13	42	20
Clarendon	7		3	12	5	16	19			8		7			38	60	58
Cookshire			5	31		31	31			3			Not Insp	Insp	ect'd	35	
Covansville	1		8	21	14	10	17			12	31				53	68	51
Grenville	No	Return.	2	40	7	40	40			10	40		Not Insp	ect'd	16	44	34
Hamden	8		4	30	3	30	27			7	40				26	56	39
Hull	No	Return.	7	13	13	48	13			7					17	41	15
Lachine	No	Return.	4	25	5	22	31			7					23	50	28
Lacolle			5	18	13	11	12			7					35	59	65
LaPêche	10		5	35	4	24	35			7					24	46	54
Leeds	No	Return.	7	14	7	31	18			4					24	46	54
Magog	No	Return.	2	30	10	18	28			9					34	39	28
Mansonville			6	18	13	11	12			2	18				Not Insp	ect'd	
Marbleton	1		2	31	14	7	31			7					22	50	55
Philipsburg	2		6	30	10	18	28			9					Not Insp	ect'd	
Rawdon	No	Return.	2	18	13	11	12			2	18				15	47	20
St Henri	No	Return.	9	31	17	20	26			5	27				33	45	30
St Lambert	8		5	17	5	8	16			6	8				Not Insp	ect'd	
St Yvester	No	Return.	5	17	5	8	16			6	8				29	50	40
Uxvorton	No	Return.	5	17	5	8	16			6	8				21	52	51
Valleyfield	No	Return.	5	17	5	8	16			6	8				28	47	23

Averages of Marks in each Group of Branches as per Returns of Inspection held on a certain day.
Maximum No. of Marks in Each subject, 100.

Number of Pupils in different Branches as per Annual Returns

EXAMINATION PAPERS

SET TO ACADEMIES AND NORMAL SCHOOLS.

(N. B. In each paper any four questions, but not more than four, might be answered.)

Arithmetic.

1. Extract the square root of 167·9616 and $\sqrt[4]{\frac{2}{11}}$. (15)
2. Extract the cube root of 16777216 and $\sqrt[3]{\frac{2}{11}}$. (15)
3. Find the L.C.M. of 17, 51, 119, 210 and the G. C. M. of 689 and 1573. (10)
4. Simplify (a) $\frac{3}{4} - \frac{3}{7}$ (b) $5\frac{1}{2} + 6\frac{3}{11} + 1\frac{1}{15}$. (15)
5. (a) Multiply 2.4327 by 4.32; (b) divide 1089.97 by 23. (15)
6. (a) Multiply $3.\bar{7}$ by $5.\bar{4}9$; (b) divide $3.\bar{4}$ by $4.0\bar{9}$. (25)
7. Find the gain or loss per cent. on buying oranges at \$2.50 per hundred and selling them at 8 for 12 cents. (25)
8. Find the interest of \$3200 for 2 years and 7 months at $7\frac{1}{2}$ per cent. (20)
9. At what rate per cent., will \$520 amount to \$800.80 in 9 years. (25)
10. Find the present worth of \$842.70 for 2 years at 6 per cent., compound interest. (25)
11. Define the following terms: *Vulgar Fraction, G. C. M., Prime Number, Discount, Proportion, Dividend, Quotient, Ratio, Numerator, Simple Fraction.* (20)

Geometry.

1. Define the following terms: *A Right Angle, a Circle, a Rectangle, a Sector of a Circle, and an Equilateral Triangle.* (25)
2. If one side of a triangle be produced, the exterior angle shall be greater than either of the interior opposite angles. (10)
3. Give the general statements of all the propositions of Book I which deal with the equality or inequality of triangles. (25)
4. If a straight line be divided into any two parts, the squares on the whole line, and on one of the parts, are equal to twice the rectangle contained by the whole and that part, together with the square on the other part. Give the algebraical proof. (25)
5. The angle in a semicircle is a right angle; the angle in a segment greater than a semicircle is less than a right angle; and the angle in a segment less than a semicircle is greater than a right angle. (15)
6. Describe an isosceles triangle, having each of the angles at the base double of the third angle. (15)
7. The sides about the equal angles of equiangular triangles are proportional, and those sides are homologous which are opposite to the equal angles. (25)

Algebra.

1. Explain the terms : *Co-efficient, Factor, Index, Dimension, Binomial.* (10)
2. Simplify $2c - (6a - b) - \{c - (5a + 2b) - (a - 3b)\}$
or $5x - 3 [2x + 9y - 2 \{3x - 4(y - x)\}]$ (10 each.)
3. Square $3 - 5x + 2x^2$ and find the continued product of $x + a$, $x + b$ and $x - c$. (10)
4. Divide $x^3 - 3xy + y^3 - 1$ by $x + y - 1$. (10)
5. Find the G. C. M. of $x^4 + 67x^2 + 66$ and $x^4 + 2x^2 + 2x^2 + 2x + 1$. (15)
6. Break up into elementary factors $x^2 + 184 + 81$, and $x^2 + 124 + 36$. (5)
7. Resolve into two or more factors $x^2 - 1$, $x^6 - 1$, $m^4 - 16$, $x^6 - 1$. (5)
8. Solve the equations :

$$(a) \frac{2x - 1}{3} - \frac{x + 4}{9} = \frac{5x - 1}{27} \quad \text{and}$$

$$(b) 3(x - 1) - 4(x - 2) = 2(3 - x). \quad (25)$$
9. Divide the number 84 into 2 parts such that 3 times one part may be equal to 4 times the other. (20)

10. Solve the equations :

$$(a) \begin{cases} 2x + 3y = 3 \\ 3x + 7y = 7 \end{cases}$$

$$(b) x^2 - 7x + 2 = 10. \quad (25)$$

11. The product of two numbers is 108 and their sum is twice their difference ; find the numbers. (25)
12. A person buys 8 lbs of tea and 3 lbs of sugar for £1, 2s. ; and at another time he buys 5 lbs of tea and 4 lbs of sugar for 15s., 2d. ; find the price of tea and sugar per lb. (25)

Natural Science.

1. Name the constituents of the atmosphere. (10)
2. Explain the difference between a chemical combination and a mechanical mixture, giving examples. (15)
3. What is meant by "varying inversely as the square of the distance" ? (15)
4. How would you roughly calculate the depth of a well or pit? The flash of a gun is seen 3 seconds before the report is heard. Calculate the distance. (10)
5. What is a *Thermometer*? A *Barometer*? A *Syphon*? (15)
6. What experiments prove that there are two electricities, negative and positive? (25)
7. Name the various kinds of lenses. (15)

8. Name the constellations that do not sink below our horizon in the province of Quebec. (25)

9. Give the common names, and if you can, the botanical names of ten wild plants which grow in our province. (25)

10. Describe a steam engine, a common pump, or a foundry. (25)

Book-Keeping

1. How would you keep a Cash-book properly? What is a *Balance*? (10)

2. John Brown bought \$150 worth of goods from you and paid you \$100 in cash and gave you his note for the rest. How would you enter this transaction in your books? (20)

3. Write out the form of the above note which Mr. Brown gave you. (10)

4. Name the different books required in *Single* and *Double* Entry respectively. (20)

English Grammar.

1. Enumerate the parts of speech. (10)

2. Define any five of them. (10)

3. (a) What is meant by a regular or weak verb, and by an irregular or strong verb? (b) Give an example of each. (c) How is the passive formed? (15)

4. (1) What is meant by an auxiliary verb? (2) What are the auxiliaries of *Tense*, *Mood*, and *Voice* respectively? (3) Give the parts of an English verb that has no auxiliary of any kind. (25)

5. Write out the first persons plural indicative *active* and *passive* of all the tenses simple and compound of the verb "to find." (20)

6. State the different classes of pronouns and decline *I* and *She*. (20)

7. (a) How are adjectives compared? (b) Give the two leading classes of adjectives as regards meaning, and (c) the comparative and superlative of (1) *Gentle*, (2) *Thoughtful*, (3) *Big*, (4) *Good*, (5) *Little*. (15)

8. Define the terms: Simple Sentence, Compound Sentence, Complex Sentence, Noun Clause, Adjective Clause, and Adverbial Clause, giving an example of each. (25)

9. Analyze the following sentence, particularizing the principal clause and the subordinate clauses: "The person *who told you that I said so is mistaken*." (20)

10. Parse the words italicised in the foregoing sentence. (15)

11. Give the general analysis of the following lines:

To prayer, repentance, and obedience due,
Though *but* endeavoured with sincere intent
Mine ear shall not be slow, mine eye not shut;
And I will place within them as a *guide*
My umpire conscience, *whom* if they will hear,
Light after light, well used, they shall attain,
And to the end persisting, safe arrive. (25)

12. Parse the words italicised in foregoing sentence. (25)

History.

1. Name the countries forming the British Isles and give the origin of their names. (10)
2. What caused the Romans to withdraw from Britain? What was the effect of this withdrawal? (10)
3. Give a brief account of the life of Alfred the Great. (20)
4. Name the sovereigns of the Norman line with the dates of their accession to the throne. (25)
5. In whose reign and in what year was Ireland annexed? (10)
6. Mention with dates and results the famous battles fought during the reign of Edward III. (25)
7. Give the name, date, and result of the last battle of the Roses. (20)
8. State briefly the leading features of the Tudor period. (10)
9. What great event took place in 1588? (10)
10. Give a short account of the reign of William III. (25)
11. Mention with dates and results the names of any five of the battles of the Peninsular war. (25)
12. What important events correspond with the following dates: 1265, 1603, 1660, 1707, 1815, 1837? (25)
13. Mention five of the most prominent men connected with the early history of Canada and give a short account of any one of them. (25)
14. Give an account of the sieges of Quebec with dates and results. (25)
15. What territory in America was taken from France by the treaty of Utrecht? What is its date? (15)
16. What was the chief cause of the Rebellion of 1837? Who were the leaders in it? (10)

Sacred History.

1. Mention any four of the Old Testament characters, and give a short account of any one of them. (25)
2. Name any five of the Beatitudes. (25)
3. (a) Where was Christ born? (b) Where did He chiefly live? (c) At what age did He begin His ministry? (d) Which disciple betrayed Him? (e) Which denied Him? (f) Where and by whom was He crucified? (25)
4. Enumerate the leading incidents of the Resurrection of Christ. (25)

Geography.

1. Define any five of following terms: *Continent, Bay, Peninsula, Gulf, Promontory, Isthmus, Cape, Strait.* (10)
2. Give any two of the proofs of the rotundity of the earth. (10)
3. Enumerate the political divisions of North America, giving one city or town in each. (15)
4. Write out with their capitals the Provinces of the Dominion of Canada. (20)
5. Give the counties either north or south of the St. Lawrence in the Province of Quebec. (25)

6. Name the great mountain ranges of North and South America and account for the direction and size of the chief rivers. (15)

7. Explain the terms : *Latitude, Longitude, Archipelago, Basin, Watershed.* (25)

8. Name the oceans of our globe, and state what continents the eastern and western shores of any two of them skirt. (20)

9. Mention any ten of the countries of Europe with their capitals. (20)

10. Name three of the more important British possessions connected with each of the four continents. (25)

11. Enumerate any ten countries with their capitals from Asia, Africa and South America. (20)

12. Give any ten counties of England north of the Thames, with the chief centres of the Cotton, Woollen and Cutlery manufactures. (25)

French.

1. How are *the, of the, some, or any* translated into French? Give an example of each. (10)

2. Give the general and special rules for the plural of nouns. (20)

3. In what important respect do French and English adjectives differ? (5)

4. Give the feminine of *gros, sec, mon, vieux, and blanc*, and the masculine of *complète, grecque, nouvelle, causeuse, and fraîche*. (20)

5. (a) When do *vingt* and *cent* take an *s*? (b) In how many ways is *mille* written? (10)

6. Enumerate the possessive adjective pronouns singular and plural. (20)

7. Give a list of the expressions in which the verb *to have* is employed in French where in English *to be* is used. (25)

8. Write the first person singular of the simple tenses of *avoir* and *être*. (25)

9. Write in full the future indicative and present subjunctive of *aller* and *faire*. (25)

10. Give the third person singular of all the simple tenses of one verb from each of the conjugations. (25)

11. In what two cases does the past participle vary? Give examples. (15)

Latin.

1. (a) How many declensions are there in Latin? (b) How known? (c) Give an example of each. (10)

2. Give (a) the nominative singular of (1) *bonos cives*, (2) *reipublicae*, (3) *linguam Latinam*, (4) *eo tempore*, (5) *dierum serenorum*; and (b) the accusative plural of (1) *alta quercus*, (2) *magnum caput*, (3) *deorum immortalium*, (4) *mare profundem*, (5) *asperrimi montes*. (10)

3. (a) How are the comparative and superlative of adjectives formed? (b) Give the comparative and superlative of (1) *altus*, (2) *felix*, (3) *liber*, (4) *facilis*, (5) *parvus*. (10)

4. State to which class each of the following pronouns belongs and decline any one of them : (1) *ego*, (2) *is*, (3) *sui*, (4) *noster*, (5) *idem*, (6) *quis*. (15)

5. (a) What are the principal parts of a Latin verb? (b) How are the different conjugations distinguished? (10)

6. Give the principal parts of *sum*, and write out the first persons plural of all the tenses of the indicative and subjunctive. (20)

7. Write (a) the present imperative of (1) *conor*, (2) *vercor*, (3) *sequor*, and (b) the future imperative active and passive of (1) *laudo*, (2) *rego* (3) *capio*. (20)

8. Give (a) the future infinitive active and passive of (1) *moveo*, (2) *veho*, (3) *rapio*, (4) *sepelio*, and (b) the participles active and passive of the same verbs. (20)

9. Write in full the future indicative active and passive of *facio*. (15)

10. Give the different persons of the present indicative and present subjunctive of *nolo*. (15)

11. Write in full the future indicative and present subjunctive of either *possum* or *eo*. (15)

Greek.

1. Give (a) the terminations in the nominative of nouns of the 1st and 2nd declensions; (b) the genitive and accusative singular, the genitive dual, and the accusative plural of (1) *χώρα*, (2) *γλώσσα*, (3) *πολιτης*, (4) *νήσος*, (5) *δῶρον*. (15)

2. State (a) what is meant by the stem of a noun, (b) how stems of the 3rd declension end, (c) what are *labial*, *guttural*, *dental* and *liquid* stems. (10)

3. Say to which class of stems each of the following nouns belongs, and decline any one of them:—(1) *φίλαξ*, (2) *γίψ*, (3) *ὄρνις*, (4) *θήρ*, (5) *πόλις*, (6) *βασίλεις*. (15)

4. Decline (1) *οἶς*, (2) *γίρος*. (10)

5. Give (a) the nominative singular of (1) *οἰρανὸν ἐρπίν*, (2) *χῶραν τραχειαν*, (3) *λόγοι ψευδεῖς*, (4) *γυναῖκες ἀνδρῆαι*, (5) *ὄλιγας τρίχας*; and (b) the genitive plural of (1) *παῖς πρῶτος*, (2) *φίλος σαφής*, (3) *ἐνδαιμων ἀνήρ*, (4) *ὁ γέρον*, (5) *ἅσαι αἱ θεαί*. (20)

6. (a) How are the comparative and superlative formed? (b) Give the comparative and superlative of (1) *σαφής*, (2) *φίλος*, (3) *τραχύς*, (4) *ιχθύρός*, (5) *μργας*. (15)

7. To which class does each of the following pronouns belong? (b) Decline any one of them. (1) *σί*, (2) *αὐτοῖ*, (3) *ἄλλήλων*, (4) *ἑμῆρος*, (5) *οὗτος*, (6) *αὐτῶς*, (7) *ὅς*, (8) *τίς*. (20)

8. Into what five classes are verbs in ω divided according to their stems? (10)

9. Write out the short paradigm of the 2nd Aorist active, middle and passive of *τίπτω*. (20)

10. Give the future, active and middle, and 1st Aorist active of *ἄγγελλω*. (15)

11. Write out the short paradigm of the 2nd Aorist active of either *ἰδῶμι*, or *ἴσθημι*, or *τίθημι*. (20)

12. What are the characteristics of the *future* and of the *perfect* active *labial*, *guttural* and *dental* verbs respectively? Give illustrations. (20)

N.B.—To make up the maximum of 100 in Book-keeping, Latin and Greek—marks were allowed in the former for Books kept by the pupils, in the latter two for passages of translation.

EVENING LECTURES AND CLASSES FOR YOUNG MEN.

The General Committee of the Young Men's Christian Association, in order to do something "to help our young men to improve their time and better their condition," have advertised the following courses of lectures and classes :

LECTURES.

1. Ten lectures on "Physiology and Hygiene." The lectures composing this course will be given by Drs. F. W. Campbell, Shepherd, Sutherland, Beers, Roddick, Proudfoot, Osler, Ross, Perrigo, and Gardner.
2. Ten lectures on "Chemistry of common things with Experiments," by J. T. Donald, B. A.
3. Ten lectures on "American History," by Dr. Kelley.
4. Ten lectures on "The First Principles of Machinery," by Prof. Robins, LL.D.

CLASSES.

5. "Commercial Arithmetic." C. A. Humphrey, Esq., Head Master Royal Arthur School.
6. "French for beginners." Rev. A. B. Cruchet.
7. "Book-keeping." P. S. Ross, Esq.
8. "Phonography." D. A. Budge, Esq.

An Inaugural Lecture will be delivered on Monday, October 3rd, at 8 P.M. by Principal Dawson, of McGill College.

NOTES ON EDUCATIONAL TOPICS.

RELIGION IN SCHOOLS.

One of the papers, that attracted most attention in the late Convention of the Ontario Teachers' Association, was by Professor Daniel Wilson on "Religious Instruction in the Public Schools." This is a subject which under the form of Moral Education is sure to demand, sooner or later, the attention of those interested in education, and our readers will be glad to have a short account of Dr. Wilson's opinions upon it.

The duties, he maintained, of the teacher are only second to those of the Christian minister, and while a school, in which merely intellectual training is given, would leave an important part of its work undone, *moral and religious training must go hand-in-hand*. The question then as to what religious training

should be given naturally presses for an answer. We will give Dr. Wilson's answer in his own words :—

“ It is no part of the duty of a Public School teacher to set forth denominational catechisms or creeds, or in any form to inculcate dogmatic theology. It is no disparagement to him to say he is not the fit person for such dogmatic teaching. All matters of special denominational diversity of opinion, questions relating to the sacraments, to Church order, ministerial or priestly authority and power—in so far as they are in any sense a fit part of youthful education—pertain to the home-training, the Sunday School, or other Church organization. The attention now paid to Sunday School work is one of the most healthful features of the age; and to the Sunday Schools of the various denominations may be safely confided the training of their own children in all which they specially value as distinctive in creed and Church order.”

This point was illustrated still further in detail. Speaking of the use of the Bible in schools, which he strongly recommended wherever possible, Dr. Wilson pointed out the lessons to be learned from it.

“ There is no such apt lesson as ‘ Consider the lilies of the field how they grow,’ or that of the sparrows—now no strangers in Canada—‘ not one of which falleth to the ground without the will of our Heavenly Father’; or of the young ravens that ‘ neither sow nor reap, neither have they storehouse nor barn; and yet God feedeth them.’ There is ‘ the rain coming down on the mown grass,’ ‘ the hen gathering her chickens under her wing,’ the good shepherd leaving his ninety and nine to go in search of the lost sheep; and all else of moral beauty and wisdom so aptly fitted to the young mind, eager for knowledge, open to all impressions, and receiving the bias for good or evil on which the whole future life so often depends. He must have little in him of the true teacher who cannot turn to account the parable of the wise and foolish builders, or the story of the unforgiving servant, or the buried and useless talent.”

Unhappily, however, cases had occurred in which even Bible reading and the use of the Lord's Prayer at the opening of school work had proved a stumbling block and a cause of dissension. In such circumstances it appeared better to omit the religious element altogether than to allow it to become an occasion for strife and sectarian division. And after all, the best of all moral culture was the informal teaching of example and personal influence imparted by a teacher of high tone and character. Teachers hold a stewardship with no mean responsibilities.

“ On your training may depend the moral standard by which the commerce of our young country shall be regulated; or that by which our future statesmen shall mould the decrees of our legislature, and inaugurate that righteousness which exalteth a nation. Your influence as teachers is enormous if you

use it wisely. The minds of a young generation are submitted to you, unstained as the parchment on which you write what can never be wholly effaced, impressible as the wax by which its attestation is sealed. Ever remember how wonderfully observant children are. You teach them, whether you will or no, by your daily life, in word and deed. Every display of temper, every tampering with the strictness of exact truth, every rude act or irreverent word, is so much of tares sown among the young wheat, to grow up at times rankly, and choke the good seed."

No exception can be taken to Dr. Wilson's conclusions as far as they go, but it is perfectly clear that this is not very far. Moral and religious training, we are told, must go hand in hand, but this is eventually whittled down to moral training through the informal teaching and the personal influence of the teacher. This is practically a confession that the question is one at the present incapable of solution, and in this conclusion we should feel inclined to join with Dr. Wilson. It needs no Horace to tell the teacher

"———— incedis per ignes
Suppositos cineri doloso."

We are living in an age pre-eminently marked by moral and religious transition, and we must leave many questions for a generation of greater unanimity and fixity of belief to settle.

BOARDING AND DAY SCHOOLS.

A letter contributed by the Rev. Charles Hamilton, of Quebec, to one of the daily papers and reprinted in the *Gazette*, contains an interesting comparison between the advantages to be derived from the rival systems of Boarding Schools and Day Schools. Before commenting upon the subject we shall let Mr. Hamilton speak for himself.

"In day schools the education is necessarily limited to the class-room and the instruction which can be afforded there. Memory and judgment and taste may all be exercised and cultivated. But these are only parts, though important parts, of the boy's complex nature, and even they can be developed only in the way and to the extent permitted by the class room. The power of a day school is necessarily limited to the hours during which it is held, and to the opportunities which the circumstances connected with these hours afford. The boy's training and education, which do not stand still when the day school closes each afternoon and wait to be taken up again at the same point when the school bell rings at nine o'clock the next morning, but which proceed unceasingly from hour to hour, must necessarily depend upon the circumstances of each hour, and these circumstances have, it is clear, nothing

to do with the day school. They are governed by countless influences connected with the position and home life of each boy.

"In a boarding school the opportunity for influencing and guiding the whole training, the education of the boy in all his faculties, is secured. The instruction afforded in the class room is given under more favorable circumstances, because the arrangements connected with the boy's life are regulated and ordered by one mind—the Rector's—with a view to this. Besides this the boy's life spent in community with others of his own age, subject to the same rule and discipline, introduces an influence which enters into and affects him—however unconsciously—in all his occupations and pursuits. This influence is present not merely in the class room, but all the day long, week in and week out. He is not merely a boy—a unit—he is a member of a large family with a character, a history, and traditions of its own. Under this influence he lives a boy amongst boys, not only in the class room, but at his meals, in his dormitory, in the hours of study, and, above all, in his hours of recreation on the play-ground and in all games and manly sports.

"Instruction and book learning are essential, but their value is very seriously impaired for many by inability to read and understand human nature, by incapacity to deal with and to get on with others in life. Quickness in reading character, in recognizing the spirit and temper of men, and in adapting one's self to them is natural to some few gifted individuals. It can be acquired by many only in youth, in such intercourse as school life, particularly life in a large boarding school, affords. The study of human nature is here pursued with less conscious effort than any other subject. There is no avoiding it—because it comes through unceasing intercourse and constant dealing of boys with boys amongst boys. At the same time and through the very same means, each boy is learning self-control, endurance, courage, and a general readiness to give and take in a good-tempered way in the great battle of life.

"I do not think that I am overstating the comparative advantages of day schools and boarding schools, and yet I am ready to admit that after all a day school may for some boys be better than a boarding school. Physical-health must be considered and other circumstances which will readily suggest themselves to most persons. Quebec and Montreal have both, happily, excellent day schools. Each can regard its high school especially with satisfaction and confidence. The Province of Quebec possesses only one boarding school, which aims at reproducing amongst us as far as circumstances will permit the English Public School. I desire accordingly to urge all, who may appreciate the advantages of a public school and who may be able to afford them for their sons, to unite in supporting the school at Lennoxville, and to exercise their personal influence in rendering it a strong and vigorous institution.

"Some few families in Montreal and Quebec are sufficiently wealthy to gratify their appreciation of a Public School training by sending their sons to England. They certainly secure thereby the very best and highest training, but they as certainly sacrifice two advantages,—that of educating their sons

in the country and amongst the people with whom their work in life will probably be associated, and that of helping to build up in this country a Canadian Public School."

We are glad to acknowledge that we agree with Mr. Hamilton as to the advantages to be derived from the youth of a country receiving their education where they will probably live in after life, as well as in regard to the duty of all classes to co-operate in building up educational institutions of their own. How far circumstances will permit the reproduction of the English Public School upon Canadian soil time will show. There is at least no objection to the experiment being made, and it is greatly to the advantage of the public that a choice between different systems of education should be open to them. And for reasons that will be mentioned presently, we think the Province of Quebec fortunate in having so good a school as Lennoxville within it. Mr. Hamilton has, however, raised an interesting question, and there are two points, which are brought into special prominence in the extract that we have reprinted from his letter, upon which we have a word to say. He affirms that one of the special advantages to be derived from education in boarding schools as distinguished from day schools is the development it gives to all the sides of the nature of the pupils and, specially, that it imparts greater knowledge of human nature. We are sorry that we cannot agree with Mr. Hamilton upon either of these points.

Though the wide extension of the boarding school system in England during the present century was due to the increased facilities afforded for locomotion by railways, in origin the system is a survival from the monastic institutions of an earlier date. It is a system eminently fitted to thrive in Great Britain, where those who can afford higher education are scattered much more impartially than in Canada over the whole of the country. These schools have mostly sprung up in, or near, considerable towns, and while they admit as a general rule a fair proportion of day scholars, they depend for their existence upon pupils that come from the rural districts. This, however, is only the case in such schools as Sherborne, Uppingham, and Repton, where the number of boarders far exceeds that of day scholars. But in the public schools located in cities, such as London and Liverpool, the reverse is the case. The English public school is here mainly a day school. Merchant Taylor's

admits no boarders as a school, though the masters are free to open boarding houses.

To call a system a "survival" is not, we freely admit, to condemn it, but it explains why the system does not thrive as well elsewhere. Life in Canada is in everything freer than in the Eastern hemisphere, and what is submitted to as natural there is often regarded with dislike among us. Fagging, for instance, which is the rule in England, would not be tolerated by most Canadian parents. Now, far from their giving the widest culture to the youthful nature, we believe that boarding schools exercise, to a certain extent, a cramping effect upon the social nature of the scholars. The system is an attempt to train youth without the salutary ingredient of home influence. Dr. Arnold saw this and tried to take up a different position with regard to his scholars, to place himself *in loco parentis*. And the loss of home influence, the massing together of great numbers of boys within a limited space of ground and in crowded dormitories, is known to have given birth to vices and misery which we are happy to believe are unknown in Canada. The boarding school in England is only not a hotbed of impurity when the greatest care is taken, when the school is in the hands of masters of the greatest vigilance and of the highest moral tone and character. In inferior hands, whenever the vigilance is relaxed, and wherever the environments are unfavorable, the results are most deplorable.

Far from imparting greater knowledge of human nature to the scholars, we believe that this knowledge is better obtained from the mixed influences of school, home and society, as in Canada. Whether we are to regard the result as good or evil is another matter, but it is safe to say that any average Montreal or Quebec boy has far greater knowledge of human nature than an English boy of the same age educated at a boarding school. He is in a far better position to enter into business and the affairs of life, and is only probably inferior in mere intellectual attainment.

There are many boys, on the other hand, for whom a boarding school is a salutary training. Only sons spoiled by a bevy of admiring sisters, boys of a shy and retiring nature, boys who show no disposition to indulge in the sports of the playground, those born in our country districts—all these may very well avail themselves of the advantages of a boarding school. But educa-

tion in Canada is a different matter from education in England, and the type of education that is best fitted to thrive here is the education of our great city schools.

REVIEWS.

ELEMENTS OF QUATERNIONS, by A. S. Hardy, Ph. D., Professor of Mathematics, Dartmouth College. (Ginn, Heath & Co., Boston.)

Nearly thirty years have elapsed since Sir William Rowan Hamilton's wonderful invention was given to the public in his lectures on Quaternions. In this there were many unnecessary difficulties caused as much by Hamilton's peculiarities of style and the quasi-metaphysical reasoning with which the volume abounded as by the essential abstruseness of the subject. As a consequence none but the bravest and best-trained mathematicians obtained more than a hazy idea of the nature and scope of quaternions. The later years of Hamilton's life were mainly devoted to the enlargement and refinement of his quaternion methods, and his death in 1865 immediately preceded the publication of his second great work—"The Elements of Quaternions." About the same time an elementary exposition of the subject was published by Prof. Tait, one of the ablest and most enthusiastic of Hamilton's disciples. This volume, however, like those which preceded it, was addressed to the trained mathematician, but in the past few years the necessity of smaller and still more elementary treatises for beginners has arisen, and Prof. Hardy's book is intended to meet this want.

What are quaternions? is a question which is frequently asked, but very rarely answered. It would, in fact, be impossible, without a great deal of preliminary explanation, so to define quaternions as to give any adequate idea of their nature or of the results to which they lead. We can only say that they constitute no new discovery of physical truth, but rather a new mathematical method, founded upon generalizations of ordinary algebraical and geometrical methods, and including the facts of ordinary algebra and geometry as particular cases. Any one, for instance, will find that, with the extended meaning attached to addition and multiplication, the product xy is not necessarily the same as yx , and that the sum of the two sides of a triangle may be

equal to the third side. The triangle of velocities or forces will at once occur as an illustration, but for the development of these ideas into a powerful method of investigation we must refer to some such work as the one before us.

Prof. Hardy's "Elements of Quaternions" is, we believe, the first American publication on the subject of which it treats. The explanations in the introductory chapters are extremely lucid and full, and in the geometrical and other applications are all that can be desired. Of the typography of the work it is impossible to speak with too much praise: in it we have a fitting embodiment of the most refined and elegant of mathematical methods.

G. H.

SHAKESPEARE'S HAMLET, arranged for reading in schools, with Notes, by John Andrew, Instructor in McGill University, &c. (Dawson Brothers, Montreal).

The late G. H. Lewes once remarked that the play of Hamlet was the most popular play in our language, and accounted for the fact of its width of interest: "It *amuses* thousands annually, and it stimulates the minds of millions. The source of the delight is two-fold: First, its reach of thought on topics the most profound; Secondly, its wondrous dramatic variety." It is this latter quality that makes it by far the most excellent single piece for elocutionary training. Its moods vary "from grave to gay, from lively to severe," as Pope wrote in imitation of Boileau. As an old elocutionist, Prof. Andrew saw this and has prepared this handy little edition for reading in schools. Editor and printer have combined to produce a work quite unique in Canadian printing.

First, as to its get up, the type and size are the same as that of the Rugby edition, and the notes are given at the foot of the page. We have said that it is excellently printed, and as it may be obtained for thirty-five cents it is the cheapest edition at all to be obtained with notes. In regard to the editor's work, Prof. Andrew has kept his purpose strictly in view. The book is intended as a reading edition, not as a commentary for scholars. The explanations are terse and sufficient, and the editor occasionally shows wise boldness in the way in which he has presented

the text. Thus he avoids an anti-climax, by following Furness's example in printing:

"I'll call thee, Hamlet,
King, father ; royal Dane, O, answer me !"

Occasionally we miss a note, as for instance on "I am too much i' the sun." "Doubt," in the four lines beginning "Doubt thou the stars are fire," cannot mean "suspect." But the explanations given are generally excellent. Thus, "colleaguèd with the dream of his advantage" is very properly explained (after Moberly in the Rugby edition) by "imagining also that he will make something out of it," which is surely more natural than the explanation of the Clarendon editors. In conclusion we have only to add that the short notes make it clear that Prof. Andrew, after consulting the best editions, has used excellent judgment in deciding between rival interpretations, and has produced an edition highly creditable to Canada and the best we know for the purpose which the editor had before him.

A SCHOOL HISTORY OF CANADA, by Henry H. Miles, M.A., LL.D.
Second edition. (Dawson Brothers, Montreal).

We are glad to welcome a new edition of Dr. Miles's school history. With all its imperfections (and it had too many typographical errors and other small slips), it was our best school history of Canada and it was wonderfully free from errors of fact. Then again, and it is a great thing for the young, it was a much prettier book than others, such as Mr. Jeffers' work. The new edition in every way is a great improvement upon the old. The type and the general get up are a credit to Canadian printing; in fact we do not know that any superior book of the kind has been printed in Canada. Very few, and those mostly unimportant, illustrations have been omitted, and many of great interest have been added. Thus we find a more authentic portrait of Champlain substituted for the old one, while the volume is enriched by vignettes of Marguerite Bourgeoise, Amherst, Wolfe, Carleton, and Simcoe. Trivial incidents upon which space was wasted in the first edition have been reduced to their proper importance; thus the visit of the Prince of Wales, which occupied three pages, now fills only one and a half. Indeed it were to be wished that the revision had gone even further than it has,

but this would have made Dr. Miles's history a new book, whereas the present volume is substantially the same as the old. In conclusion we have only to add that we heartily recommend the work for use in Canadian schools.

ELEMENTS OF ALGEBRA, by G. A. Wentworth, A. M., Professor of Mathematics in Phillips Exeter Academy. (Ginn, Heath & Co., Boston).

It is one of the features of the educational activity of the age that text-books on all subjects are rapidly multiplying, and multiplying out of all proportion to their increase in the last generation. It is an age of pushing and struggling for existence: no time can be wasted, and each man must get what knowledge he can with the greatest possible expedition. To meet this necessity increased simplicity has become the watchword of text-book writers. This is easily observable in many new books on arithmetic and algebra, in which the student is taught to solve in a purely mechanical manner various kinds of examples while he is furnished with no logical or scientific grounds for his proceedings. Without such logical treatment, arithmetic and algebra are useless as instruments of education in its higher sense. Accordingly it is satisfactory to find that Mr. Wentworth has endeavored to make his treatise free from this faulting. He says in the preface to the work before us:

"The single aim in writing this volume has been to make an algebra which the beginner would read with increasing interest, intelligence and power. The fact has been kept constantly in mind that, to accomplish this object, the several parts must be presented so distinctly that the pupil will feel that he is *mastering* the subject. * * * * About four thousand examples have been selected, arranged, and tested in the recitation room, and any found too difficult have been excluded from the book. The idea has been to furnish a great number of examples for practice, but to exclude complicated problems that consume time and energy to little or no purpose."

The book opens with a full and clear explanation of the technical phraseology and symbols employed in algebra. Then we have a statement of axioms followed by some elementary examples. Some of the problems, however, given at this stage of the subject are premature, and should have appeared among the problems involving simple equations. The chapters devoted to Factors, Quadratic equations, Choice and Chance, and Logarithms are all well written. The chapter on choice commences thus:

"If three paths, A, B, and C, lead to the top of a mountain, there is obviously a choice of three different ways of ascending the mountain; and

when then the top of the mountain is reached there is again a choice of three different ways of descending. How many different ways are there of doing both?

"If a traveller ascend by A, he may descend by A, B, or C. This makes three ways of doing both. If he ascend by B he may descend by A, B, or C; and again, if he ascend by C he may descend by A, B, or C.

"Therefore there are $3 \times 3 = 9$ ways in all of doing both. These ways may be represented as follows:

- | | | |
|-------------|-------------|-------------|
| 1. A and A. | 4. B and A. | 7. C and A. |
| 2. A and B. | 5. B and B. | 8. C and B. |
| 3. A and C. | 6. B and C. | 9. C and C. |

To quote again from the chapter on logarithms;

"In the common system of notation the expression of numbers is founded on their relation to *ten*.

"Thus, 3854 indicates that this number contains 10^1 three times, 10^2 eight times, 10^3 five times, and four units.

"In this system a number is represented by a series of *different* powers of 10, the exponent of each power being *integral*. But, by employing *fractional* exponents, any number may be represented (approximately) as a *single* power of 10.

"When numbers are referred in this way to 10, the *exponents of the powers* corresponding to them are called their *logarithms* to the base 10," etc., etc.

We are prevented by want of space from quoting further. Such an introduction is calculated to give the beginner a clearer understanding of the subject than the bare statement found in many algebras and often unexplained, that "the logarithm of a number to a given base is the index of the power to which the base must be raised to give the number."

Mr. Wentworth says with truth:

"Originality in a text-book of this kind is not to be expected or desired, and any claim to usefulness must be based upon the method of treatment and upon the number and character of the examples."

While agreeing with this principle one must confess to feeling some disappointment that Mr. Wentworth has not expressed his obligations to Mr. Hamblin Smith, on whose valuable book his own work is in a great measure based. The chapter on Factors, which is perhaps the most valuable chapter in the whole book, is almost a verbatim reprint from Hamblin Smith. Mr. Wentworth is not above the foible of altering the common terminology to gratify his own whims. He substitutes "factoring" for "factorising," (a word which by its very form implies the operation of reducing to factors), and "affected quadratics" for "adlected quadratics." There is no logical reason for either of these alterations, and there is a logical reason against the first. These,

however, are points of etiquette and good taste, and do not affect the general treatment of the subject. The examination of Mr. Wentworth's Elements of Algebra has given the writer considerable pleasure, and it can be commended as a book logical in its treatment, clear in its explanations, and well adapted for the instruction of beginners.

NOTES AND NEWS.

Theology and Morality.—Such is the title of a pamphlet which we have just received and which we hope to notice in our next. Its author, Mr. N. Prowse, B.A., was last year an assistant master in the High School, Montreal.

Alderman McCord.—At a late meeting of the Board of Protestant School Commissioners for Montreal, a vote of thanks was passed to Alderman D. R. McCord for the interest he had taken in the matter of the neutral panel.

Translations and Appointments.—The Rev. Dr. Stevenson has resigned his position as Chairman of the Board of Protestant School Commissioners, and the Rev. Canon Norman has been elected in his place. Mr. R. M. Campbell, of the McGill Normal School has been elected to fill the post of head master of the high school, Three Rivers. Mr. John W. Tucker, B. A., a graduate of McGill College, has been appointed to the vacancy caused by the retirement of Mr. R. S. Weir from the senior school. Mr. F. W. Mills, of the Church of St. James the Apostle, has been appointed instructor of vocal music in the High School for girls.

The Teachers' Pension Act.—A correspondent sends us, by way of contribution to this vexed question, the Earl of Beaconsfield's *bon mot* about Superannuation: "The history of superannuation in this country is the history of spoliation. It is a very short history, for it may be condensed in one sentence, 'You promised a fund and you exacted a tax.'" As far as we can learn, Montreal is the only place where stoppages have been made from the salaries of teachers. Why is this?

The First Parliament in America.—Such is the title of an extremely interesting paper contributed to the July *Antiquary* by Mr. W. Noel Sainsbury. Sir George Yeardley was appointed Governor of Virginia in 1618, and in the following year he summoned the first Parliament that ever assembled in the New World. It consisted of twenty-two members, and seems to have been elected and to have conducted itself on the model of the greater institution in the old land. Mr. Sainsbury prints from a list in the Record Office the names of the members. Judging

from these names, two at least of the burgesses, Mr. Walter Shelley and Mr. Paulett, must have been of gentle blood; most of the others seem to have been of middle-class families. One Mr. Gourgainy may have been a French Protestant. If not, we should surmise that he came from one of the Channel Islands.—*The Academy*.

The Dealings of Colonists with Aborigines.—At a meeting of the Anthropological Institute of London (June 28), Sir. H. Bartle Frere read a paper "On the Laws affecting the Relations between Civilized and Savage Life, as bearing upon the Dealings of Colonists with Aborigines." The conclusions arrived at were: 1. That it is possible for the civilized to destroy by war the savage races, to expel, or repel, or turn them aside in their migrations. 2. That proximity of civilized to savage races, has led, or is leading, to the decay and probable extinction of the Bushman race; but this result is doubtful in the case of the Hottentot races, and is certainly not taking place with regard to the Basuto or Kaffir races. 3. That the changes consequent on proximity of civilized and uncivilized races are approximation to the European type of civilization. 4. That the essentials to such approximation are: (a) a Pax Romana or Anglicana bringing with it (b) protection of life and property, which involves equality before the law, individual property in land, abolition of slavery, abolition of private rights of making war and of carrying arms without the authority of the supreme ruler; (c) power of local legislation on European principles, with a view to secure education in the arts of civilized life; taxation sufficient for state purposes, &c.; restrictions on the use of intoxicating substances, as measures essential to the attainment of any one of the preceding objects.—*The Athenæum*.

Owing to press of matter the Departments have to stand over till next month.

CORRESPONDENCE.

MATHEMATICAL EDUCATION.

To the Editor of the EDUCATIONAL RECORD:—

DEAR SIR,—Will you allow me a little further space to pay my acknowledgements to Mr. Hubbard, for his reply to my former letter. (See July and August Nos.) It is entirely unnecessary for Mr. Hubbard to apologize for his youth, for I am sure all will agree that it is most commendable in a young man to interest himself in the question of education, which has in late times risen to the position of being one of the utmost importance to all classes of

every civilized community; which is the most powerful equalizer of those classes and is now engrossing a large share of the attention of the learning and the legislature of every country, which has in view the prosperity and advancement of its people.

I fear, however, that Mr. Hubbard may have been misled, by the too ambitious heading of my letter, "Mathematical Education" and that this has caused him to go quite beyond and above the mark. In that letter one thing was advocated and one thing taken for granted. The one thing advocated was the committing to memory of mathematical definitions, and particularly the formulae of Trigonometry, in early youth; the thing taken for granted was that it is best that the grammars of the classical languages should also be learned at this early stage.

Now this certainly does not amount to a "method" of teaching either the mathematics or classics, nor is the latter my "method," but, as part of a method, it has been in practice and still continues in the great public schools of Britain, which probably rank as high as any in the world, where boys are admitted quite young and for that admittance have had a previous training of several years, with the result that most of our best classical scholars have been sent forth from those schools.

Mr. Hubbard proceeds to inform us as to the different aims of the two branches of study, putting the matter very neatly, and I can agree with him to a certain extent, provided he will grant that the "treasures of the past" might be more expeditiously stored by the study of classical histories in our mother tongue, and further, that the great object of learning the classics is the mental training it gives, which, no doubt, his experience will tell him, as he recalls the thought demanded for the elucidation of many a difficult passage, by the collation of different readings and by the necessary research among antiquities and so forth. He will probably be ready to grant also, as great objects, the very thorough knowledge of our own tongue, which this study imparts, the increased facility for learning modern languages with their construction and etymology, and the demonstration of their convergence towards those three great currents which perhaps may have had their source in Babel. But all this is quite beyond the question of learning the Greek and Latin accidence and mathematical tables.

Mr. Hubbard tells us, too, that the object of mathematics is to train the reason for the intelligent use of what memory has in store. So far so good and I agree, and would therefore have the young memory well stored with mathematical tables, for the reason that they may hereafter be used intelligently.

Again he says, "It is better that the child, young as he may be, should know the meaning of what he says," etc. True! But is it always possible? Does not Mr. Hubbard's experience tell him that he learnt many things in childhood upon which the light of reason did not dawn perhaps for years.

Then again, "I would rather that a scholar should be able only to demonstrate the 1st proposition, etc. with a thorough understanding of the same, than that he should be able to repeat six books as a parrot." These theoretical

truisms don't work in school practice. Out of a class, coming newly to geometry, probably not 20 per cent will have an idea of what the author is driving at, and is it preferable to wait at the first proposition till all the various capacities have digested it, or after a reasonable effort to go on and allow the light to break in little by little, as it invariably does on all but very peculiarly constituted intellects? Still Mr. Hubbard's plan may be worth a trial, a heavy pull at first might make the running lighter afterwards and this might work in individual instances but hardly with a class.

Again, the next paragraph objects that a child learning rules without reason will not care for the reason by and by. I do not see that knowing $\sin^2 + \cos^2 = 1$ should make the youth careless about knowing what \sin^2 and \cos^2 mean.

Once more, "If he enters the study with the idea of seeking for *reasons* and not for *rules*, he will by that very means acquire rules which depend not upon treacherous verbal memory, but rules which, even forgotten, can be reproduced by reason." A child's memory once thoroughly impressed is not treacherous, but very tenacious, and, if the rule come first and the reason afterwards, cannot in this case too the reason reproduce the rule?

Suppose then a child to be just commencing, let us say "Reduction"; will Mr. Hubbard tell him to work it out by reason and thus find the rule or would he give him the rule first and, after applying it for a time to get its working, show him the reason? I think it would be the latter in spite of his theory which reads so takingly.

I can imagine, too, many cases in which it would be most inconvenient to have to reason out a couple of pages of deductions to get at some wanted formula, which a well stored memory might have given at once. So I am still inclined to advocate the committing of formulæ to memory at an early stage, but shall be most happy to acknowledge the fallacy of the plan when convinced by something better than theoretical truisms practically impossible or the "I do not like you Dr. Fell" style of logic! It should not be forgotten that when educators legislate, it should not be for the more highly gifted but for the average mind or perhaps even lower than this, and then many of these pleasing theories which look so well and work so badly would be exploded.

Hoping that I shall yet make a convert of Mr. Hubbard to my very moderate fraction of a "method" and hoping, also, that we shall see something more from his promising pen.

I have the honor to be, Sir,
Your obdt. servant,

C. W. PARKIN.

Sherbrooke, P.Q., Aug. 29, 1881.

[*Note.*—We would remind correspondents and contributors that all contributions should be accompanied by the name of the writer (not necessarily for publication) We would also ask correspondents to make their letters as short as possible, or to throw their remarks into the form of an article.—
EDITOR.]