

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
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- 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
- 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.
- Additional comments:/
Commentaires supplémentaires:

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Includes supplementary material/
Comprend du matériel supplémentaire
- Only edition available/
Seule édition disponible
- Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/
Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

Includes index. Title on header taken from : caption of issue.

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

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
								✓			

THE
CANADA SCHOOL JOURNAL.

DEVOTED TO

THE INTERESTS OF EDUCATION AND THE TEACHING
PROFESSION

IN THE

DOMINION OF CANADA.

Recommended by the Minister of Education for Ontario.
Recommended by the Council of Public Instruction, Quebec.
Recommended by Chief Supt. of Education, New Brunswick.
Recommended by Chief Supt. of Education, Nova Scotia.
Recommended by Chief Supt. of Education, British Columbia.
Recommended by Chief Supt. of Education, Manitoba.

VOLUME V.

TORONTO:
W. J. GAGE & COMPANY,
1880.

CANADA SCHOOL JOURNAL.

INDEX TO VOLUME V.

	PAGE		PAGE
Amendments to the Ontario School Act	51	Industrial Education in Public Schools	221
Annual Report of the Minister of Education	29	" Keeping In."	272
Art of Thinking, The	8	Magazines	50
" Bombastes " against Canada, The case of.....	271	Mathematical Department ..11, 36, 66, 81, 107, 134, 156, 233, 251,	277
Botany in the Schools.....	14	Methods of Preserving and Stimulating the Desire for Knowledge..	40
" But."	156	Mistakes in School Teaching.....	13
CANADA SCHOOL JOURNAL in 1881.....	245	Necessity for Earnestness and Self-discipline.....	9
Canadian Art.....	272	Notes and News....19, 44, 73, 93, 119, 146, 165, 195, 214, 239, 260,	235
" History, Sources of.....	150	Objective Teaching	64
Central Committee, The	270	Official Department.....23, 47, 76, 96, 124, 244,	263
Civilizing Influence of Schools, The.....	273	Payments by (or for) Results.....	8
Cleanliness and Order.....	153	Personals	220
Co-Education of the Sexes.....	269	Physical Education in Schools.....60,	173
Collegiate Institutes, The Special Grant to.....28, 35,	231	C. P. Mason, B.A., F.C.P....	1
Corporal Punishment	101	James DeMille, A.M.	125
Correct Method of Reading St. John I. 1.....107, 133,	184	Jas. H. Hoose, A.M., Ph.D.	149
County Model Schools.....	52	Practical Department ..12, 38, 67, 84, 109, 143, 159, 191, 211, 235, 254,	279
Cramming, The Medical Association on	197	" Hints on Teaching.....	17
Departmental Examinations.....	202	Publishers' Department	93, 148, 171, 220, 244, 268,
Dominion Legislation for the Young	101	Qualifications of Teachers	10
Editorial Notes and Gleanings	4, 17, 30, 43, 100,	Queries, Answers to.....	22
Education at the Antipodes.....8,	31	Readings and Recitations, 22, 48, 75, 96, 121, 147, 169, 195, 218, 263,	238
" in Japan, Progress of	65	Recent University Gatherings The	245
" in Nova Scotia	77	Remedy for Formalism in State Education.....	173
" in England.....	127	Reports of Her Majesty's Inspectors of Schools, England, Extracts	
" in Manitoba	30, 104,	from	53
" of the Indians	132	Reviews	24, 49, 99, 124, 170, 218, 244, 267,
" Over-pressure in.....	199	Schools of Ancient Greece and Rome, The.....5,	32
Educational Progress	176	School Matters in Ontario Legislature	27
" Activity in the Maritime Provinces.....	197	" Superintendent and his Teachers, The	41
" Condition of Ireland	276	" By-Law Inviolable	272
" Congress at Brussels	224	" Discipline.....	249
" Vandals	223	Science Notes	19
Elocution, The Necessity of	105	" and Art Department, England, Summary of Results.....	8
Examination Questions	15, 43, 92, 116, 187,	Spelling Reform	79
Exchange Department.....48, 72,	118	Subjunctive and Potential Moods, The.....	225
Exhausted Brain, Intellectual Exertion of the	106	Superannuation Fund, The	65, 247
From Pestalozzi to Froebel	176	Teachers' Associations, 48, 75, 97, 122, 147, 168, 174, 196, 243, 263,	239
Geographical Notes	53, 79, 102,	" Legislative Committee	173
General Remarks and Suggestions	151	" Salary Question, The.....	221
Great Enterprises.....	268	" Renewal of Strength, The.....	278
Gymnastics of the Brain.....	200	Technical Education	181
High School Rivalry.....	51	Text-books in Nova Scotia, Changes in	78
" Grants, The.....	222	The Smaller vs. the Larger High Schools	223
" Schools, vs. Collegiate Institutes	270	"Three R's," The.....	105
Higher Female Education in England.....	77	University Consolidation in New Zealand	2
History, The Study of.....	33	" Collego	225
" in our Public Schools.....	130	" of Halifax, The.....	27
Home Work of School Children	171	" Reform	28
How to Pronounce " Musa "	80	" of Toronto, The.....	246
Hygiene, Principal Points to be Taught in Schools	228	Use and Abuse of History, The.....	274
Improvement of School Buildings.....	247	What makes the Rowdies.....	18
Incurables, The.....	246		

The Canada School Journal.

Vol. V.

TORONTO, JANUARY, 1880.

No. 32.

C. P. MASON, B.A., F.C.P.,
(FELLOW OF UNIVERSITY COLLEGE, LONDON).

Mr. Mason was born in 1820, in the neighbourhood of London. After a careful home education, he was placed, in the twelfth year of his age, as a pupil in the Junior School of University College, London, then just opened, with Professors Key and Malden as Head Masters. Having risen to the top of the School in about four years, he proceeded to take his place as a student in the College, entering at once the Senior classes in Latin and Greek. University College, (or as it was then called, in expectation of a special charter, the 'London University'), had a staff of unusually distinguished scholars as its Professors; and it was Mr. Mason's good fortune to pursue his classical studies under the two eminent men named above, and to have his mathematical studies guided successively by Professor White (whose early and accidental death cut short a career of singular promise), Professor De Morgan, and Professor Sylvester. In due course, Mr. Mason carried off the highest prizes in the various classes which he attended, and obtained a scholarship, which enabled him to continue his studies at home, and, subsequently, at the University of Bonn.

As soon as a charter was granted to the University of London, Mr. Mason matriculated, and proceeded, after the necessary interval, to his degree, obtaining an Exhibition at Matriculation, and being bracketed second in Honours at the Degree examinations in Classics.

After an interval, occupied in study and private teaching, Mr. Mason was invited, in the year 1848, to accept the Professorship of Classics and Mathematics in the Lancashire Independent College, which had just been established for the education of candidates for the ministry among the Independents. He discharged the very laborious duties of this post for nearly seven years, when he accepted the invitation of a friend to take the educational direction of a large and important private school at Denmark Hill, near London. He worked in conjunction with the gentlemen referred to for three years, when the school passed entirely under his control, and was the sphere of his uninterrupted labours for twenty years more. By that time, he deemed it prudent to withdraw from the harassing cares involved in the management of a school comprising about 120 pupils, of whom about half were resident. It was in the course of this career as a school-

master, that Mr. Mason turned the results of his experience to practical purpose in the gradual elaboration of the English Grammar with which his name is now familiarly associated.

Mr. Mason has also, for several years, been an active member of the London Committee for making arrangements for the conduct of the Local Examination instituted by the University of Oxford, as well as a member of the Council of the College of Preceptors, a chartered institution which conducts courses of instruction for teachers, and grants diplomas on examination to successful candidates, and which also conducts an extensive scheme of examinations for pupils in schools in various parts of the United Kingdom, and carries out the preliminary literary examinations of other chartered bodies, such as the College of Surgeons, the Pharmaceutical Society,

&c. The number of candidates at its various examinations has of late exceeded ten thousand per annum. Mr. Mason has for many years acted as one of the examiners in English at these examinations. He also acted at various times as Inspector and Examiner of Schools on behalf of the University of London, under the scheme promulgated by that University.

Besides his English Grammar, Mr. Mason has published various educational works, as aids to the study of English, Latin and Mathematics, and is a not infrequent contributor to the literary journals of the day.

The works which have made Mr. Mason's name so familiar in Canada are his English Grammar (the Complete and School editions), and his Notes on Paradise Lost. His large grammar is authorized for use in the Public and High Schools of Ontario, and the School edition is used in some of the other provinces. His notes on

Milton are used in many of the High Schools and Collegiate Institutes of Ontario.

Mr. Mason finds time to contribute occasional articles for the CANADA SCHOOL JOURNAL, and they are always welcomed as clear, definite expositions of the points discussed.

He has been an enthusiastic and indefatigable worker, not merely in the department which he has made specially his own, but in other fields of professional labor. Whenever necessary, he has been an outspoken advocate of the rights of teachers; and he is to-day honoured in his own and other lands as a man who chose to rise to a distinguished position in the profession of teaching rather than on it.



The Canada School Journal

IS PUBLISHED THE FIRST OF EACH MONTH AT

11 WELLINGTON ST. WEST, TORONTO, ONT., CAN.

Subscription \$1.00 per year, payable in advance.

Address—W. J. GAGE & CO., Toronto.

CANADA SCHOOL JOURNAL HAS RECEIVED

An Honorable Mention at Paris Exhibition, 1878.
Recommended by the Minister of Education for Ontario.
Recommended by the Council of Public Instruction, Quebec.
Recommended by Chief Superintendent of Education, New Brunswick.
Recommended by Chief Superintendent of Education, Nova Scotia.
Recommended by Chief Superintendent of Education, British Columbia.
Recommended by Chief Superintendent of Education, Manitoba.

The Publishers frequently receive letters from their friends complaining of the non-receipt of the JOURNAL. In explanation they would state, as subscriptions are necessarily payable in advance, the mailing clerks have instructions to discontinue the paper when a subscription expires. The clerks are, of course, unable to make any distinction in a list containing names from all parts of the United States and Canada. The present issue reaches nearly 12,000.

UNIVERSITY CONSOLIDATION IN NEW ZEALAND

Not only in Ontario, but in the far off colony of New Zealand, the important question of University consolidation is receiving a large share of public and official attention. In New Zealand, however, the question discussed is rather the remodelling of the present imperfect system of affiliation to the University than the settlement of the question, or principle of affiliation *de novo*.

At present the New Zealand University exists as an examining body. Affiliated with it is the Otago "University," Canterbury College, and six other smaller so-called "colleges." For many years it had been a moot question, as well as a topic of discussion both in the Legislature and in the public press, whether or not the University should continue to be a merely examining body, or whether it should not rather discharge the teaching functions of a University or University College. At length a royal commission of inquiry was issued directing the commissioners to consider and report upon a much broader question than that of affiliation of colleges. Taking advantage of the issue of such a commission, the Government of the colony wisely enlarged its scope, and directed the commissioners to inquire into a number of questions growing out of the university as well as the public educational system. The extensive and interesting character of this inquiry may be gathered from the fact that the commissioners were required to report upon the following subjects:—

"1. The constitution, organization, operations, resources, expenditure and efficiency of the University of New Zealand, and of the various institutions within the said colony, (1) for the imparting of the higher or University Education, (2) of the secondary or intermediate or grammar-school or high-school education, and (3) of the technical education by means of training schools, schools of art and design, and schools or colleges of practical science.

"2. The mutual relations and mutual influences of the University of New Zealand on the one hand, and of the secondary and technical schools on the other.

"3. The relations which the primary schools sustain, or

ought to sustain, to the secondary, technical, and superior institutions.

"4. The best means of bringing secondary and superior education within the reach of the youth of both sexes, by increasing the number of institutions for such education, by the establishment of morning and evening as well as day classes, by means of scholarships to be held by scholars from primary and secondary and technical schools; or by any other means for the purposes hereinbefore mentioned.

"5. The best means of making sufficient and suitable provision for the maintenance, administration and inspection of institutions for education other than primary; and,

"6. The condition, value, and application of endowments made out of public estate, or grants of public money, held under any trusts for the promotion of education, or which may have been obtained or procured, either directly or indirectly, under any grant from the Crown, or under any Act, ordinance, regulation, or other authority whatsoever for the purposes aforesaid; but nothing herein shall require you to make any enquiry respecting any lands or endowments set apart or applied for the purposes of primary education under 'The Education Act, 1877.'"

The Commissioners have presented an elaborate report, extending to nearly 500 pages. They have, however, only reported upon the "University question" and one or two minor matters. The recommendation which they make in regard to the University is to the effect that the University of New Zealand should continue to exist as an examining body, and that there be affiliated with it, under new conditions, the Otago and Canterbury institutions—the designation of which to be changed to that of University Colleges—and that the two colleges at Auckland and Wellington be enlarged to the status of University Colleges and have new buildings erected for them. The other four "colleges" are to occupy the position of grammar or high schools, and, as such, to sustain the relation of feeders to the four University Colleges. The Commissioners then say:—

"In devising a constitution for the governing bodies of the colleges, we have been influenced by three separate considerations of nearly equal importance. 1. In the first place, we have borne in mind that the colleges owe their existence and maintenance to grants of public money or land; and that, on that account, if for no other reason, the Government ought to exercise some direct control over them. 2. In the second place, the professors—whose duties and interests are so inseparably bound up with the prosperity of the colleges, and who must be more intimately acquainted than any other persons can be with the inner working of the colleges, and with the necessities of the students—have an undoubted claim to a voice in the management of these institutions, a claim which is fully recognized in other Universities. 3. And lastly, the graduates, with their experience of the special characteristics of the life of their college, and their personal reasons for desiring to see its efficiency and reputation well maintained, may be expected to exert a beneficial influence if admitted to a share in its government. We therefore recommend that the council of each college be composed of twelve members, as follows: four members to be nominated by the Governor in Council; four members to be elected by the professorial board of each college; four members to be elected by the graduates of the New Zealand University, on the books of the Colleges, as soon as there are twenty such graduates by examination; this last group of members to be appointed by the Governor in Council until there are twenty such candidates."

Two other recommendations of the Commissioners are to the following effect :

" 1. That the said colleges shall not in any way be under the jurisdiction or control of the Senate of the New Zealand University further than as regards the regulations for qualifications for the several degrees or other University distinctions; the said colleges being, in all other respects, subjected only to the provisions of the University Act, and the regulations of their respective governing bodies or councils.

" 2. That the office of Visitor of the University and the University Colleges, we think, should not be of a merely honorary nature, but should be brought into connection, in some degree, with the general system of education in the colony. Believing that the progress of the University and its colleges will be watched with great interest by the people, we suggest that the Minister of Education should be the Visitor of all these institutions, in order that in his place in Parliament he may be able publicly to give such information respecting them as occasion may require."

The other questions submitted to the Commissioners are barely touched upon, and are to form the subject of a subsequent report.

"PAYMENT BY (OR FOR) RESULTS."

(Old and New Plans.)

In his report on the Training of Teachers in the colony of Victoria, the head of the training institution thus contrasts the old and new systems of "payments by (or rather for) results" in vogue in England. He says:—

"A consideration of the broad phases through which elementary education has passed in England since the introduction of Government aid is suggestive, when we are considering what to look for and how to obtain it. At first schools were subsidized on the report of the inspector as to their general condition. There was no individual result examination, but the school was judged by its efficiency as a whole. Under this plan the schools blessed with good teachers were often excellent, but the work of the average school was loose; depth in a few points was sacrificed to superficiality in many; numerous subjects were taken, but few were thoroughly taught; sharp and clever scholars made rapid progress, but the class teaching was indefinite, and the result, as far as the entire elementary school system of the country was concerned, was comparatively poor.

"A complete change was inaugurated after a few years. Grants were now made conditional on the results of the examination of the individual scholars in reading, writing, spelling and arithmetic, and for a while no recognition was made of anything else. This reaction against superficiality and hazy teaching, in favor of thoroughness and definiteness, secured attention to the required subjects and unlimited grinding at them, whilst it drove almost all others out of the school curriculum. Good scholars deteriorated, medium scholars remained stationary, bad schools improved; the best teachers had been attending to the individual scholars before, but all teachers now found substantial gain, though it was lessened by unfortunate drawbacks—a limited syllabus, a tendency to sacrifice the brighter children for the sake of those who were dull, a

satisfaction with a very low standard, and the loss of intellectuality in the teaching.

"During the last few years the aim of the English education department has been to maintain definiteness and thoroughness in the three R's and in spelling, to cultivate an improved style of class-teaching, and to introduce the study of higher subjects and an approximation to scientific method in dealing with them, where it can be done profitably. There is therefore an individual examination of all the scholars in reading, writing, spelling and arithmetic, an examination of classes (and practically of class-teaching), in geography, grammar, history and needlework, and an individual examination of advanced scholars in certain special subjects in those schools which deserve and desire it, and grants are made conditionally upon success in these three divisions. This is exclusive of the work of the Science and Art Department, which has its own subjects, its syllabus, its examinations and its scale of payments for results."

—The Annual Report of the Science and Art Department of the Committee of Council on Education gives the following summary of results:—The number of persons who have, during the year 1878, attended the schools and classes of science and art in connection with the Department, are as follows, viz.:—57,230 attending science schools and classes in 1878, as against 55,927 in 1877; and 727,874 receiving instruction in art, showing an increase upon the previous year of 117,254, or more than 19 per cent. At the Royal School of Mines, there are 36 regular and 189 occasional students; at the Royal College of Chemistry, 303 students; at the Metallurgical Laboratory, 74. At the Royal College of Science for Ireland, there were 22 associate or regular students, and 53 occasional students. The lectures delivered in the Lecture Theatre of the South Kensington Museum was attended by 5,491 persons. The evening lectures to working men at the Royal School of Mines were attended by 1,685 persons, being 458 more than last year; and 169 science teachers attended the special courses of lectures provided for their instruction in the new science schools at South Kensington. The various courses of lectures delivered in connection with the Department at Dublin were attended by about 1,421 persons. The total number of persons, therefore, who received direct instruction as students, or by means of lectures, in connection with the Science and Art Department, in 1878, is 794,547, showing an increase as compared with the number of the previous year of 113,180, or more than 16 per cent. The attendance at the Art and Educational Libraries at South Kensington, and at the National Library of Ireland in 1878, has been 76,064, or an increase of 1,782 over that of last year. The museums and collections under the superintendence of the Departments in London, Dublin, and Edinburgh, were last year visited by 2,329,877 persons, showing a decrease of 218,899 on the number in 1877. The returns received of the number of visitors at the local art and industrial exhibitions, to which objects were contributed from the South Kensington Museum, show an attendance of 513,986. The total number of persons who, during the year 1878, attended the different institutions and exhibi-

tions in connection with the Department. has been upwards of 3,589,487. This total, compared with that of the previous year, presents a decrease of 675,152. The expenditure of the Department during the financial year 1878-79, exclusive of the vote for the Geological Survey, amounted to £282,553 11s. 5d. —*Educational Times.*

—We republish the articles of the Constitution of the International Society for Investigating and Promoting the Science of Teaching—referring to membership. The Society is now organized, and is meeting with much encouragement. Any Canadian educators who desire to join or obtain further information concerning the Society should address Prof. S. P. Robins, Inspector of Protestant Schools, Montreal, or James Hughes, Inspector of Schools, Toronto:

ART. I.—This organization shall be known as the International Society for Investigating and Promoting the Science of Teaching.

ART. II.—Its objects being strictly professional, its membership will be confined to the following classes:

(a) Persons employed to instruct teachers in Professional Schools.

(b) Superintendents, commissioners, and other officers whose main occupation is the inspection of schools and licensing of teachers.

(c) Persons who by authorship, public addresses, or eminent success as educators, have given proof of their interest in the Science of Teaching.

ART. III.—Any person thus eligible may become a member on the following conditions:

(a) He shall make application to the Corresponding Secretary, who shall refer the case to the Membership Committee and report the name of the applicant to each member of the Society at least one month before the annual meeting.

(b) Upon unanimous report of this Committee his name shall be proposed at the first session of the Annual Meeting of the Society after application, and a three-fourths vote by ballot of the members present shall be required for election.

ART. IV.—The person so elected shall be immediately notified by the Corresponding Secretary, and upon payment of an entrance fee of Twenty Dollars he shall be constituted a member of this Society. Thereafter his dues shall be Ten Dollars a year, to be paid to the Secretary on or before the first day of the Annual Meeting. A delay of three months in paying the annual dues shall forfeit membership, and the name, if again proposed, must be treated as that of a new member.

—THE last half-yearly report of the Committee on School Management of the London (Eng.) School Board, recently issued, states that "the Committee have received and considered during the half year the Government reports on 155 schools, of which 118 are permanent, 36 temporary, and one a half-time school. The average attendance at the permanent schools was 87,274, of the temporary 6,575, and of the half-time school 221, giving a total for all the schools of 93,868. The reports and statistics of examination are given in three categories:—(1) For 137 schools (112 permanent and 25 temporary), with an average attendance of 88,276, the reports on which are for a period of exactly one year; (2) for 17 schools (6 permanent and 11 temporary), with an average attendance of 5,371, one or more departments of which are reported upon for more or less than a year; and (3) for the London street, Bethnal Green, Half-time School, with an average attendance

of 221. It is noteworthy that the percentages of passes in each subject are lower, not only than those for the preceding half-year ending March 31st, but also than those for the corresponding half-year of 1878. The average amount of grant earned is also less than for the same period last year." The explanation given for the apparent falling behind, is that the standard required is gradually being raised.

—American teachers sometimes complain about the fact that they do not receive that social recognition to which they are entitled. We may, however, congratulate ourselves on the fact that we are certainly not worse off in this respect than our brethren in England. A Mr. George Holloway, President of a political organization, recently delivered an oration, in which he spoke as follows:—"He had no doubt the leaders of the Liberal party had felt during the last few years that their only chance of maintaining their ascendancy in the borough would be by striking off the register a large number of working men, and so they found that in 1877, at the registration of that year, they sprung a mine upon them by objecting to a large number of respectable working men upon the miserable plea that they were living in houses belonging to their employers, and therefore they were not independent voters—he meant such men as carters, shepherds, cowmen, bailiffs, keepers, coachmen, gardeners, grooms, lock-keepers on the canal, and gate-keepers at crossings on the railways, National School masters—in fact, almost all people of that sort.

—WE are pleased to record the complete and decisive victory of the London (Eng.) School Board over those who opposed its policy at the recent annual election. The "extravagance" plea was the main cry of the opposition, and the people have given an unmistakable verdict in favor of right. The *Daily Telegraph* speaks as follows of the result:—

"Once more the London School Board has won a victory over the opponents of its policy. In summing up the general results of the election, we may say that they are, on the whole, decidedly favorable to the friends of national, compulsory, and unsectarian education. There is no better proof that the policy of the Board is practically irreversible than the fact that so many of the clerical members who were at the last election sent to oppose it have now confessed that, when faced with the circumstances and conditions with which the Board had to deal, they found themselves utterly unable to formulate an alternative policy. This ought to encourage good hopes for the future. The "economic" candidates who have now been elected will, we trust, be powerless for evil. They may talk of economy to their constituents, and pledge themselves to reduce the rate or arrest its increase. But the fact remains that the Elementary Education Act must be carried out in terms of the compulsory by-law. That means that there must be provided in some way or other a school place for every child in London, and every child must be got into a school place. There is, therefore, but one way of securing a large reduction in expenditure, and that is to adopt the bold and uncompromising plan of Mr. Wylie, the 'Radical' and secularist opponent of the Board policy, which is to work the Act on the principle of the Poor Law, cut the higher standards out of the curriculum, and turn the Board schools into refuges for 'gutter children,' for whom cheap instructors of their own class might be provided. Unfortunately for the 'economists,' this policy is just what the Act will not permit anybody to carry out. The 'economists' who have led their constituents to suppose that they will cut down the expendi-

ture of the Board will find that they will have considerable difficulty in fulfilling their pledges."

—It is stated in the *Educational News*, the organ of the Educational Institute of Scotland, that the Edinburgh University Council have agreed to recommend the recognition of the Chair of Education in the curriculum for graduation. This will put the prelections of that Chair at once on a footing of equality with those subjects that are usually regarded as constituting a liberal education; and no one can seriously dispute that they are fully entitled to be so ranked. Mental science, even in faint outline, and its application to the work of the schoolroom; the history of education in connection with the growth of methods; the leading educational systems of the world, and their growth from national institutions and national character—these surely constitute, of themselves, no mean curriculum; and it is no more than justice to all interested in the matter that the work of the Chair of Education should receive the recognition now accorded to it.

—NEARLY two hundred female students are in residence at Cambridge. Over fifty of them are studying science. They have a large chemical laboratory and a good scientific library.

Contributions and Correspondence.

THE SCHOOLS OF ANCIENT GREECE AND ROME.

BY J. A. CULHAM, B.A.

Delivered to the Students of Pickering College.

When we read the lives and writings of such men as Demosthenes and Cicero, Æschylus and his brother dramatists; are charmed by the playful humour of Horace, and the graceful finish of Virgil's masterpieces; weep with Moschus in sweetly mournful strains over the death of his beloved Bion; hear Pindar's wild music rolling with the triumphal car of the Olympic victor; and are taught the almost Christian teachings of the school of Socrates, it is interesting, at the same time, to know something of the early life of these men, the home influences which surrounded them, their sports, their schools and their masters. But our knowledge of this branch of antiquity is very scant. The historians of both Greece and Rome seem not to have considered how they would have popularized themselves with modern antiquarians by giving an account of the school systems of their countries; and the poets confined themselves to the gods, to heroes or to love. Plato, indeed, evolved a Utopia, in which he gave education a prominent place, and Aristotle criticised him; but neither gives a detailed account of the schools of his age. The system of entombing copies of the daily journals (which did not exist) in the foundations of their temples was not then known; or we might have read a half column advertisement of the advantages, sanitary and intellectual, of some popular school, the subjects taught, the honors won by former pupils, and the names and qualifications of the masters. As it is, we are indebted for our information to casual remarks of the ancient authors—as, for instance, where Horace speaks of his father bringing him to Rome for an education which the provinces did not afford; and where Demosthenes taunts his opponent Æ-

chines with having held the position of sizar in a school where the former was a pupil.

Leaving aside the question of the age at which education begins—whether in infancy, or when intelligence first shows itself in the eyes and pretty, winning ways of babykind, or only when the compulsory hermitage of the school-room is reached,—I shall avoid all possible omission of what may come within the scope of such a subject as the present, by attempting to give an insight into the life of the youth of ancient Greece and Rome, from the cradle to the University. (They had cradles, at least something corresponding to the modern luxury.) I shall deal separately with the systems followed by the two nations; for though resembling each other to some extent, they differ in details; and I shall deal in details, attempting criticism only where a radical difference warrants it.

To begin with Greece: Greece in her prime, before local jealousies—the bane even of modern communities—had warped patriotism to partyism; before the love of pleasure and the inroads of luxury had made sybarites of its warriors; before the selfishness of demagogues had begun to prey on the venality of its citizens and to cripple the efforts of its true statesmen. Grecian children, then, of this time, both boys and girls, passed their infancy and childhood, to the age of about ten years, in the nursery, under a mother's care, with their rattles and hobby-horses.

Toys are rarely mentioned. Probably they had but few; and probably, too, the great number of slaves owned by the best families, had something to do with the scarcity. The constant attendance of slaves on the persons of the young men, would lead us to suppose that their childhood had been schooled to consider that class as existing for their convenience and pleasure. At the age of five the separate education of the sexes began, or, I should have said, the boys left the nursery and their mother's care for the schoolroom; and the girls remained at home to wait for whatsoever the future might bring. Women, in this age, were held in low estimation. The most despicable class of modern times were then the only ones possessed of education; the rest were despised and neglected. Advocates of women's rights might say, and with some reason too, that the fall of Greece was a just judgment on the nation whose appreciation of the gentler sex was so low. The question, however, is a difficult one to decide, and I shall leave it with a sigh for the barbarism of an age that respected not its women. The boys were placed under a pedagogue, who was not a teacher, as the word would imply now, but a trusty slave, who was the constant attendant of his young master. The change from the freedom of home, from humming tops and blind man's buff; from visits to the market-place on holidays with their nurses, where they watched with delight the ancient representatives of our modern "Punch and Judy," and bought gingerbread from loud-voiced hucksters, the richness of whose dialect made their Billingsgate a by-word; from excursions to the suburbs, among the tall, waving plane trees, where they saw the pure Grecian sky reflected in purer water, the home of the nymphs of wood and stream—the fairies of their nursery tales—the change from all this to the constant companionship of a slave, whose smile never encouraged, whose reprimands and chastisements were ever ready—a slave, his master, his own huge shadow—gave him his first lesson in the leading principle of Grecian education—self-suppression. Greece was placed first; himself, his pleasures, his feelings, last. Poor boy! He must have felt as a modern boy often feels in the companionship of his elders, that he was not appreciated.

We have now our little Greek at school, accompanied thither by the pedagogue. And, by Greek, I mean Athenian; for there alone, of all the cities of Greece, education was not allowed its true value. He is at school, his feet sandalled, and wearing his tunic or smock,

a dress that, like that of the Roman boy, corresponded to the men's dress as knickerbockers to the men's dress of modern times. The schools were not State institutions, no certificate or diploma was required of the masters, who, in the "Public Schools" of the time, were usually men debarr'd by mental or physical infirmity from other means of livelihood. There were no State inspectors (except with regard to morals) to cheer and flatter the pupils by a semi-annual address, or urge the teachers to greater exertions. There was no Government appropriation for educational purposes to tempt unscrupulous masters to falsify their returns; each pupil paid his own small fee. No authorized list of text-books, by its changes, drained the purses of poor parents.

Education was divided into three branches: *grammata*, *mousike*, and *gymnastike*. The first of these comprises more than the meaning of the word implies. Under it were included reading, writing and arithmetic. The manner of learning to read was simple. First the alphabet was mastered; then came the spelling of simple words; and afterwards the structure of sister sentences to *John is a good boy*. Grammar as an art was not known or studied until the founding of the Alexandrine school, about the end of the fourth century B. C.; though the Stoics had previously made the science of grammar a specialty. For the reading-classes, selections were made from the poets, principally Homer; and these selections were made with a view to creating and stimulating a spirit of bravery and a love of heroic deeds. The writings of Homer were supposed to contain all the precepts necessary to give birth to a gentlemanly and truly national feeling. Plato, in his *Utopian Republic*, expurgates from Homer all those parts which display the weaker or gentler side of his heroes' natures, or makes the gods appear too much to resemble mortals—as, for instance, such passages as—

"I had rather live
The servile hind for hire, and eat the bread
Of some man scantily, himself sustained,
Than sovereign empire hold o'er all the shades;"

Or—

"Heaven rang with laughter inextinguishable,
Peal after peal, such pleasure all conceived,
At sight of Vulcan in his new employ"—

where that deity is represented as lumping through the office of cup-bearer to his companions in Olympus. This proposed expurgation was merely a codification of the rule already followed in practice. It is hardly natural to suppose that a Demosthenic roll would invariably be heard in the reading class. There were, no doubt, the brisk boy, whose object was to reach the end of his sentence in the shortest time possible, the careful boy, who grasped the meaning of his author, and aired his youthful eloquence; and the inevitable drawler, who would give a sing-song version of Achilles' bravest deeds. But of this we know little; for no one, at this time, except the relatives of the master, was allowed to enter the school-room under penalty of death, a regulation made to prevent the corruption of the youth.

The reading hour is over, and the writing exercise now begins. And I must ask you to lay aside all ideas of our modern conveniences of steel pens, beautiful ink, finely finished paper, and such like. The Greeks had no running characters, as we have, for expedition in writing. Their school-boys practised *printing* on strips of papyrus, a substance prepared from the inner bark of a water plant. For a pen they used a reed cut into shape, somewhat in the same way as our quill pen; and for ink, a very durable black substance, which was rendered fluid by rubbing. In the ruins of Herculaneum, ink was recently found that was still fluid, of the consistency of oil, and available for writing.

We can sympathize with the hardships of the little Greek—forming the rigid characters of his language, with a pen too large for his small fingers, on slips of paper that baffled all his care to keep

under control. The task is ended, however, and the writing materials stored away. The boys come out of the struggle as veterans from a fight—one, who has been careful, and whom the fates have favored, without a stain; another, with his hands and clothes smeared with ink, the result of his carelessness; and another, bearing on his face the marks of a companion's wantonness.

Arithmetic was taught in elementary schools only in so far as it was useful. The course in this science embraced the simple rules, and such practical branches as the computation of interest and the like. The Greek system of notation differed both from the Roman and the Arabic. The first part of the alphabet, with the interpolation of some obsolete letters, was used for the units. For the rest, the remainder of the alphabet, with obsolete letters and dashes, was used.

Such was the curriculum of the Grecian Public Schools. Those patronized by the wealthier classes differed only in having more capable teachers and better accommodation. Private tutors were employed for the instruction of youths in special branches, as oratory and music.

I can recall no case of flogging in the Grecian School-room except in the writings of Aristophanes; and he does not distinctly mention the fact; but I cannot imagine boys so very good, (I have a prejudice against boys who never are in mischief,) or masters so long-suffering, that the switch was never used. We have it on record that the modern plan of applying the slipper was not unknown in Greece.

At about the age of thirteen the study of music was begun. We cannot wonder at the importance the study of this art assumed in Greece, when we consider that it solemnized public festivals, and private banquets; that the gods were worshipped in music and song; and marriage and birthday feasts were enlivened by the sweet notes of the cithara. The stirring strains of Pindar, with harp accompaniment, escorted the victor in the great national contests to his home; the choruses of the dramatists—songs that rank high in Grecian literature in vigor and beauty—were sung by trained bands and criticised by all Greece; the prophecies of Apollo's oracles were chanted by his priestesses. The favorite instrument was the harp. The flute is more ancient; but it was little used, except by professionals, for the reason that it distorted the features of the performer, and did not allow the accompaniment of the voice.

While intellectual and physical development went hand in hand at Athens, the other cities of Greece, in a greater or less degree, bear in the training of their youth the mark of barbarism, in encouraging physical development alone; bodily endurance and indifference to suffering; or in allowing both mind and body to become besotted and degenerated through indolence. The gems of literature in all departments left us by the Athenians, their cheerfulness and ready hospitality, compared with the barrenness of other States in literature, their boorishness and absence of sociability, leave no room for further commentary on the advantages of education. The object of Sparta was to make her sons warriors. Her people were imbued with that clannish spirit—common to all Greece, though intensified at Sparta—which gained for her the military supremacy of Greece against fearful odds; but which was one of the chief causes of the subjection of the whole nation to foreign rule. Thebes, the capital of Boeotia, a country whose unproductiveness seems to have paralyzed the mental faculties of its inhabitants, made use of the schools of Athens for the education of the few who had any ambition to emerge from the stupidity into which generations of unlettered ancestors had sunk them.

Let us pass now to the third division of education at Athens, viz., gymnastics. The slight attention that is paid to this art in Canadian schools, especially in the Public Schools, necessitates the

revival of the ancient system of State recognition and support of physical development. We often hear it said that such exercises as boxing, wrestling, and football are rough and dangerous. There is sufficient answer to this in the fact that all Greece, youth and old age, statesmen and warriors, philosophers and poets, frequented the gymnasium for exercise; and so knit and hardened had their frames become through practice that accidents were very rare. The gymnasia or training schools were at first in an open plain, near a river, which afforded facilities for bathing. Officers were appointed by the State to superintend these; and trainers were also employed to direct the exercises. If a weak point were discovered in a youth, these trainers prescribed a special course to remedy the defect. They also had special charge of those who intended to enter the public contests at festivals. In later times gymnasia were built in the city, and artificial baths provided. These became the resort of philosophers who found ready audiences among the youths while resting from exercise. It is no wonder that, in a country where athletic training was provided for by legislation, and rendered popular by the honors paid to successful athletes, though the education of the school room might have been almost forgotten, he still in manhood tried conclusions in a friendly way with his fellows, and in old age showed a vigor, only slightly impaired, in hurling the discus or the javelin. A word now about the universities of Greece. The idea of a massive pile of architecture, overgrown with centuries of moss, surrounded by traditions of generation after generation of alumni, and distinguished by the fame of its professions, must not be conceived: these only were found in later times. There were professors, indeed, whose renown Greece did not contain; but their lecture-room was the street, the baths, the public walks and gardens, and their class, all who wished to hear. Different schools held and taught different doctrines, as the Cynic, Stoic, Academic, and Peripatetic; each had its own professors and followers; and naturally there was considerable rivalry between the sects. Then, as now, a slight difference in doctrine was the parent of a new sect, with the bitter jealousy that must exist where men are so unreasonable as to believe that they are right and all others wrong. However, they did good work. Plato, the founder of the Academic School, has made the student grateful by his legacy to literature of treatises in the form of dialogues on almost all branches of mental and moral philosophy, politics and art; Aristotle, the founder of the Peripatetics, in his Ethics, his criticisms, and researches, is the delight of all his readers; and Socrates, the great founder of mental and moral science, the teacher of Plato and Aristotle, though his writings have not descended to us, furnished, in his life and character, an example to all succeeding ages of true nobility of mind. These and such like men were the every-day associates of the Athenian youth. They pointed out to them the path of duty and happiness, and afforded to old age the comfort of hope; they gave sound precepts to statesmen, and good legislation to states; they discussed the laws that govern the universe, and the rules for making an hexameter line. Succeeding ages have reaped the advantages arising from differences of doctrine, in the care bestowed by writers on their productions, in order to avoid the sharp criticisms of their opponents; and in the acumen displayed by the critics in detecting impalpable flaws.

In passing from Greece to Rome, I must ask you to pardon a slight digression. For the better understanding of the educational systems of the two countries, I shall briefly compare the characters of the two nations, and the aims of education in each. I shall attempt to show the great debt that Rome owes to Greece for the contributions of the latter to her literature, her art, and her social life.

I shall refer chiefly to that part of Rome's history in which she

reached the acme of her power, during the last days of the Republic, and the first of the Empire; for there the two extremes of uncompromising severity, which made the "Roman Father" a proverb and abandoned luxury, that left the task of statesmanship to unprincipled ambition, and the work of war to hireling soldiers, meet. Then we see literature flourishing; and the love of art, that made the City of the Seven Hills a gallery for the world's wonder, grown strong. Then, the whim of an all-powerful Emperor did not still the eloquence of a Cicero. These two nations, then, were of kindred origin, the descendants, both, of Asiatic emigrants, whose cry was "Westward, ho!"—shoved, as it were, into the peninsulas that they rendered famous. We cannot mark either as being older than the other: the fact that the remains of Greek literature date farther back than Roman, is more the result of circumstances than of priority of existence. The Greeks lived nearer the birthplace of the human race than the Romans. They were a seafaring people in the beginning, and became connected by their colonies and commerce with Persia and their other eastern neighbors; and this connection involved her in the Persian wars. Immediately after these wars sprang up her greatest historians and poets. It was natural that her sons should love to hear and read of the surprising feat of a countless band of warriors, led by the grasping ambition of weak-minded rulers, vanquished by a handful of patriots, who fought for "The ashes of their fathers, and the temples of their gods." Hence, therefore, arose the classical literature of Greece. Her people were united by language, tradition, religion and interest; and not yet had the demon of jealousy sown the dragon's teeth—the seeds of weakness, discord, and political death.

The Romans, on the other hand, were a small settlement on the banks of the Tiber, planted among hostile and barbarous tribes. There was at first a struggle for existence. By policy, by fraud, by force of arms, one after another, the neighboring peoples were joined in alliance with her, or became her subjects. She was looked on as a cancer, spreading its roots over all Italy, which was powerless to stay its ravages. War after war engaged her: the native Italians, the power of the Carthaginians, the barbaric hordes on the north, and the Macedonians, were successively encountered and mastered. The desire for conquest became a mania, and often even a pretext for war was not sought. During the first four centuries of her existence as a nation, there was no time for thought of literature. State records were fortunately kept, which served as a framework for the historians of later times. In the age of Augustus, more wars were waged and larger armies levied than at any previous period of Rome's history; and yet this was the "Golden Age" of Roman literature. but Augustus could command levies from among many populous cities in all Italy, and colonies planted in the foreign countries she had conquered; whilst, in earlier times, every Roman was necessarily a warrior. The influence of Grecian literature and civilization, moreover, began to be felt before the time of Augustus.

What widely different pictures these two nations present! Greece, gladly emerging from her struggle with Persia, with proud, grateful hearts, turning to the cultivation of the arts of peace, beautifying her temples in thankfulness to her gods, and, by her laws, making Greece a shrine at which her sons in other lands paid their vows of fealty. This period of her history is one of the brightest of all nations to contemplate; but the contemplation saddens us when we think that it is merely the brightness of a sunset cloud, that only awaits the night to become terrible. Rome, on the other hand, had no wars in her own defence that were not self-incurred; and yet, having once entered on her work of conquest, she could not retract. Her times of peace were only breathing spaces for a renewal of the struggle. Treacherous, grasping, domineering, her

only redeeming features are, that her sons were brave, and that she became great. "The best aid to success is success;" and if Rome had been vanquished in her early struggles, instead of victor, we should, I am afraid, be sparing of our commiseration and our charity. The early education of the Athenian, as I have said, taught him self-denial and independence. The practical side of life was kept constantly in view; his holidays were confined to the festivals of his country's gods—though in the last days of the independent existence of Greece, the love of pleasure made her the prey of those who best pandered to her degenerate tastes. Greek religious feeling was the parent of the beautiful in Greek art; her solemn tragedies were performed at the feasts of Dionysius; the masterpieces of her painters and sculptors graced the temples of Jupiter and Apollo; her songs were paeans in honor of the Olympian god. The private life of the Romans presents to us the picture of a gay, fickle, ostentatious people. Social reunions were made the occasion for a display of wealth. Their literature is, for the most part, composed of vigorous imitations of Greek writers. They worshipped the sculptures and paintings which they had pilaged from Grecian temples. Their religion amounted to fanaticism when calamity threatened; otherwise they were the slaves of mere form. Bacchus and Venus were the only deities whose rites were universally popular.

(To be continued)

EDUCATION AT THE ANTIPODES.

BY J. GEORGE HODGINS, LL.D., F.R.G.S., DEPUTY MINISTER OF EDUCATION, TORONTO.

NO. II.

Victoria. This important province of Australia contains an area of 88,200 square miles, and has a population little short of 1,000,000. The latest report received is that of 1877-8. The number of schools established is about 1,700 (including 230 night schools), attended by nearly 250,000 pupils, in the proportion of over 130,000 boys to nearly 120,000 girls. The average attendance of the whole was only about 124,000 (65,000 boys; 58,800 girls), or not quite one-half. The attendance at the night schools has not been found to be very satisfactory. Two-thirds of those who do attend are over 16 years of age, the other third ranges between the ages of 5 and 16 years. The report gives no information in regard to local expenditure for schools as such; but that through the Education Department was \$1,500,000 for teachers' salaries; \$450,000 for "teachers' results," \$25,000 for teaching singing; \$20,500 for instruction in drawing, drill, etc.; \$140,000 for "maintenance of schools;" \$1,125,000 for buildings, sites, fencing and furniture; \$65,000 for architects, inspectors of buildings, draftsmen, etc.; \$41,500 for rents, \$38,500 for office staff; \$36,000 for inspectors, and \$36,000 for books and requisites. These are the main items of expenditure. The total is about \$3,600,000. The principal of "payments for results," and of "bonuses for pupil teachers," is adopted in apportioning moneys. A system of classification of teachers, and payment in accordance therewith, is also carried out on an improved plan. The classification is (1) Head teachers, (2) First assistants, (3) Second assistants, and (4) Work-mistress. In regard to this matter the Minister of Public Instruction makes the following singular remarks:—"In connection with this subject, the rate of remuneration paid to teachers has naturally come under revision; and, in view of the vast dimensions to which the education vote has now swelled—*dimensions so vast as to threaten to imperil the very existence of the system*—it has been deemed necessary to introduce an amended schedule of payments."

In carrying out the compulsory clauses of the School Act, 24 truant officers are employed. The Minister says:—"In each dis-

trict a summoning officer is appointed (a member of the police force), whose duties are, at the instance of the truant officer, or of the local "Board of Advice," to serve summonses on defaulting parents and to conduct the prosecutions in court. The total number of summoning officers employed is 226. At the present time the compulsory clause is being carried out in 67 districts by the Board of Advice alone; in 73 districts by the Board of Advice, assisted by the truant officers; in 173 districts by the truant officers, under instructions from the Department. The extra subjects of military drill, singing and drawing are taught in a large number of schools by experts. Hereafter it is proposed that these subjects shall be taught by the regular teachers of the schools. The Minister says:—"The main advantage to be gained by this law is, that by this means instruction in these subjects will come to be imparted in schools of every grade, and be no longer confined to those schools in or near large centres of population."

In speaking of elementary science in the schools the Minister says:—"On reviewing the list of extra subjects, I cannot but regard it as a matter for extreme regret that science occupies so insignificant a position in the advanced curriculum of State Schools. I consider it highly desirable that in every school the pupils should be afforded facilities for acquiring the rudiments of at least one of the natural sciences, and a circular to carry out the object is now in course of preparation."

The schemes for the training of teachers are similar to our own, only that teachers are required to spend two years in training. There is, 1st, the "Central Training Institution"—equivalent to our Normal Schools—and, 2nd, the "Associated Schools," or "District Training School" (of which there are 18), equivalent to our County Model Schools. One valuable use to which these District Training Schools is put is worthy of notice. "Their chief business," the Minister says, "lies with the trainees," i.e., teachers in training. "These schools are doing good work. Their chief business lies with the trainees proper, i.e., those who enter for a two years' course of training, during the first of which they are placed in one of these schools for instruction in the prescribed subjects of study, and for a training in the practice of teaching. *This latter function the schools also perform for any inefficient teacher who may be temporarily transferred to them, with a view to the improvement of his faulty process, by giving him an opportunity of observing approved methods of teaching, and of endeavoring to carry them out under the supervision of an experienced instructor.*"

The report of the Principal, or Superintendent of the Central Training Institution, discusses the whole question of training teachers, with great ability and practical judgment. Want of space prevents the insertion of several valuable and suggestive remarks.

There is one item in the report which is worthy of note. It is the planting of the school sites with trees. The Minister says: "The work of planting the school sites with trees has not been neglected during the year. Nearly 2000 trees, consisting principally of the blue gums, cypresses, pines and oaks, have been supplied at a cost to the Department of \$155, and money grants have been made in addition to the amount of \$2,337. Fifty-four sites have thus been planted at a cost of \$2,492." This incidental feature of the Victorian school system is well worthy of adoption in Ontario.

THE ART OF THINKING.

The three leading characteristics of healthy thought are *clearness, comprehensiveness and quickness*; and although it may tax the powers for a considerable time, it should be the object of the edu-

cator to train an intellectual energy by which the most vivid impression of a subject should be presented to the mind, not merely by itself, but with all its attendant relations and bearings, and this distinct and compendious view reached by the most rapid and immediate perception. On many subjects this rapid insight into the core and the circumference of subjects is impossible, even with profound and accomplished thinkers; but the well-trained mind will be so fitted for intellectual gladiatorship, that most of the sophistries that cross the path of ordinary life will be cloven through at once as with a two-edged sword. There is a twofold method of regarding a subject, which greatly aids the thinking power. The first is the collection of details, and throwing them into generalization—the perpetually looking at the parts in relation to wholes. Thus the mind finds its views enlarged, thus it is emancipated from the village-life view of things to the lofty and universal framework of being. But if the mind is too much accustomed to look at things in their larger relations, then let it be educated by reflecting on the infinitely small and minute parts which make up the whole: instead of tracing from the inner to the outer, it becomes then the duty to trace from the outer to the inner.

We must not only learn, but we must learn how to use our learning. Thought must teach us how to use our mental stores; it is not mere reading or even accumulation—this may lead to congestion of the brain—a swamp in the understanding. The man who desires a fountain in his garden will not obtain it by pouring pail-fuls of water there—but he may get a swamp. The mental stores and store-houses should be like other stores. Much, no doubt, gets into the stores which does not reach the exchange and the cottage. But for what are the first but to minister to the intentions of the last. Eating may be pleasant work, but there may be eating without digestion. Yet it is only by the last that we have health. Thought is a worker in three great factories—minds, things and words. It is thought which needs especially to be cultivated.

Another great indispensable preliminary to correct thinking is method. It is, in truth, the very body of the art of thinking. All that logic can do is to methodize our thoughts—it does not profess to give us thoughts. As rhetoric professes to teach us the arrangement of our diction, so as to make words in their application effective, so logic professes to teach us how to arrange our reason and our ideas, so that they may wear the most complete appearance. Method, therefore, we say, should be studied. First arrange your own ideas, and you will be the better able to detect the discordancy of those who may be presented to you, even in some of your great men. Upon being admitted into the chambers of their intellect, we behold the wardrobe and vestments of their minds scattered about in ridiculous disarray; and whenever this is perceived, although you admire the genius, it is certain you lose a large amount of your previous confidence in the teacher. Methodic minds move in a solar pathway, and they leave a track of light after them in the path along which they travel.

At the same time that all this is said, I must say that method itself, system, should be worn gracefully, not obtrusively, in the mind and in the life—within the life, not upon the life—even as an eminent writer says: "Our skeletons are inside our bodies; so, generally, ought our systems to be inside our minds." I hate to see a method worn like a strait waistcoat.

Indeed this art of thinking is what is meant by logic, or the science of inference. But logic has usually been studied merely as an intellectual amusement. As it has usually been studied, it is wholly unfitted for the pugilistic gauntlet of the man of the world. The art of sound thinking and right reasoning will be obtained more readily by an earnest perusal of "Locke on the Understanding," Butler's "Analogy," Lyell's "Geology," Sir John

Herschell's "Natural Philosophy," or even from following out the higher order of legal evidence than from all the volumes of mere logic ever written or read.

PAXTON HOOD.

NECESSITY FOR EARNESTNESS AND SELF-DISCIPLINE.

BY MISS LORING, FREDERICTON.

Much harm is often done by persons who are simply using the teaching profession as a stepping stone to another, and who, instead of having their hearts in their work, only perform it as a mechanical drudgery, which they tolerate because they expect soon to be done with it forever. Now, teaching is drudgery of the worst kind, if it be performed mechanically or unwillingly; but when performed by one who, from a love of the work, has chosen it for his life-long profession, and who day after day sits in judgment on his own work, and who corrects yesterday's mistakes by to-day's clearer light, it is an ennobling employment, one in which there is not a spark of drudgery.

"Onward" should be the teacher's motto, as well for himself as for his pupils; and if it be not onward it will be backward; for if he be not a better teacher this term than he was last, he is a poorer one; and if at the end of the day he sees no errors in his own work, he is not competent to detect errors, or has not interest enough in his work to look for them.

A teacher has no right to carry his personal cares and sorrows into the schoolroom, and go through his work with an abstracted air or a woeful countenance. He belongs in school hours not to himself, but to his pupils; and should drop outside of the schoolroom all selfish thoughts. This is by no means impossible to do; one will never be able to control the minds of others until he brings his own into subjection to his will; and when this is completed, a person need never allow a thought foreign to the subject under consideration to enter his brain.

A teacher should be a cosmopolite; he has no right to have pet subjects on which he spends more time than their importance demands, or which, because he likes them himself, he teaches to the exclusion of those which would tend more to the development of the intellectual powers of his pupils, or which would be of more practical utility to them in after life. He has no right to have a particular scholar, or a particular class, which he wishes to advance. His full interest belongs to the school in general, not to a few individuals, or to a class in particular. If a teacher does not meet with that success to which he looked forward, he must not attribute it to the incorrigibility of his pupils, but search for the cause of failure in himself; in nine cases out of ten he will not have to go any further to find it.

It is the teacher's duty to cultivate a healthy constitution and a cheerful disposition. A sound body is indispensable to a sound mind. It is true that many gigantic intellects have been enclosed in frail bodies; but their weakness was perceptible in all their mental acts. We can read Milton's blindness, Pope's sufferings, and Burns' poverty, in nearly all their productions: so our own physical deformities and external annoyances show themselves in every undertaking, and that which in a great mind was simply a peculiarity, may become in us a monomania.

Our pupils will be just what we make them. If we enter the schoolroom with a listless air, our pupils will be listless and inattentive; if we come in with a careless, languid manner, they will acquire a lagging gait and sleepy movements; if we are sullen, they will be sullen; if violent, they will become violent. But if we are cheerful, animated and industrious, they will be just as quick in forming these habits, for children are imitative creatures.

QUALIFICATIONS OF TEACHERS.

BY DAVID ALLISON, LL.D., SUPERINTENDENT OF EDUCATION,
NOVA SCOTIA.

I roughly group the essential qualifications for successful teaching under three heads:—

1. Adequate mental outfit,—an intellect well stocked with knowledge, and with its powers of acquisition and thought duly developed and disciplined.

2. Aptitude, original and acquired, for the specific duties of teaching and government.

3. Upright character, as determining to a conscientious performance of duty and to the exercise of a wholesome exemplary influence on the pupils.

It is clear, at a glance, that these requisites are like the members of the body; one cannot do without the other. Strip a man essaying the functions of teacher of any of these you choose, and you do more than simply modify his usefulness you doom—him to failure. It is necessary for those who aspire to success in our noble profession to comprehend *all* the elements of success. Partial conceptions beget one-sided efforts, and such efforts never accomplish much that is really valuable.

The point that sound and ample scholarship is a *sine qua non*, is one that ought not to need pressing. It *does* need it, nevertheless, and now perhaps as much as ever before. All good things are liable to perversion and abuse, and the sound doctrine that men and women can be trained for the important work of teaching has proved no exception to the rule. The possibility and fact of such training form one of the grandest, as well as the most encouraging, features of modern education, but no amount of training can, except in some shadowy or figurative sense, enable ignorance to play the part, or do the work, of knowledge. It is, nevertheless, no uncommon misconception of normal instruction that it consists in imparting for a price, after the manner of the sophists of the Platonic Dialogues, some trick, or knack, or patented process available to conceal the absence of real knowledge, and thus to remit the necessity for its patient and laborious search. To ascertain and unfold the causes of this misconception is no part of my object. Let it be distinctly understood that all scientific instruction in the art of teaching is based on the assumption that the subject of such instruction himself knows what he proposes to teach. Let nothing be said or done in any quarter, suggesting by near or remote implication, that requirement No. 1 is not strictly fundamental.

The next point of qualification is intimately correlated with the one already considered. Does the teacher possess a thorough acquaintance with the subject which he proposes to teach? is naturally followed by the question:—Does he possess ability to impart instruction regarding it in an effective manner? These both are questions not of mere speculative interest, but of practical force and pertinence. For what is a system worth which undertakes to control the entire educational energies of a country, at least in the spheres of primary and secondary education, which regulates the building of school houses, prescribes the texts which are to be used in the schools, and seizes in its firm legal grasp the property of the people for their support—what, I say, is such a system worth, if it does not provide us with teachers in whom we can have confidence as capable instructors of our children? Now, as respects the question of training teachers for their work, we must recognise in every normally constituted human being some measure of what may be called the natural endowments of a teacher. It is to be expected, in accordance with the varying proportion of human gifts, that some have a larger share of these endowments than others, and that in some they exist in so small a degree as to make it

unwise to attempt their development. The arguments which sustain the policy of unfolding and training these rudimentary powers are precisely the arguments which sustain all professional culture. Mankind unite in the possession of certain generic faculties. These faculties are capable of cultivation, and of cultivation to certain precise ends. There is nothing more to be said. If it be not well to subject those powers of mind—and body, too, for that matter—which are to be employed in teaching to special training for that end, one of two conclusions, equally repugnant to right reason, must follow—either teaching is a haphazard procedure without law, or the laws which govern it are in unique contrast to the laws which prevail in all other departments of human effort. My claim then is that the best original aptitudes should be supplemented and strengthened by acquired qualifications. Common sense points out that the proper time for obtaining the latter, in *their grand essential nucleus*, is *prior* to the period of actual school service. Why should the magnificent and invaluable generalizations which form the basis of teaching methods be ignored any more than those on which have been reared the imposing structures of modern physics and astronomy? Why should a man enter a school-room as a palpitating experimenter, with the accumulated certainties of a half century of patient research made ready to his grasp?

Of the third and last qualification,—an earnest and upright character, displayed in constant and ardent devotion to duty, in manifestations of truthfulness and honor, in gentleness toward the timid, in patience toward the dull, in manly firmness toward the froward—of character like this, itself its own commendation to the ingenuous and impressible natures on which it operates, I will only say that this is that indispensable requisite for whose absence nothing can atone. Conjoined with such a character as this, some rare gift and grace of imparting instruction may partially redeem even serious deficiencies of knowledge; or profound erudition, in its turn, may command respect in spite of almost fatal inaptitude for the task of giving others (particularly the young) the benefit of it. Dissevered from this, both learning and skill should count for little. I am not so ignorant of public sentiment as to suppose that there is any great danger of immoral and positively characterless persons being tolerated as teachers in our schools.

We agree to differ as to our theological tenets—as to matters of theoretical truth—and we think none the less of each other for so differing but we have a common standard of morality and a common interest in its upholding. I speak now of character as exhibited in the relation and specific office of the teacher. My remarks have but indirect reference to depraved moral habitudes which are no worse in the teacher than in anybody else, save so far as they affect greater numbers and more pliant natures with their vitiating influences and examples. In the view I am taking of the subject, the true morality of teaching has its root in a proper conception and practical recognition of the responsibilities assumed. The true teacher is he who determines to do faithfully his duty *as teacher*, and thus his work is done beforehand in the solitude of his own conception and purpose, even as the creations of genius live in the artist's mind before they breathe in marble or glow on canvas.

COMPENSATION AND CAPACITY—It ought to be an established fact that the compensation of teachers must not depend on length of service, but on the capacity of the teacher. There are teachers who have been for years at the work who are creatures of routine, of technicality, utterly without the inspiring quality. Then there are teachers still in the first year of their labor who were born for that labor, and who are nearly as suggestive as adaptable, and as judicious as they will be years hence.—*Ed. Journal of Va.*

Mathematical Department.

Communications intended for this part of the JOURNAL should be on separate sheets, written on one side only, and properly paged to prevent mistakes. They must be received on or before the 20th of the month to secure notice in the succeeding issue, and must be accompanied by the correspondents' names and addresses.

SOLUTIONS ASKED FOR.

H. F. P. asks for solution of the following: Find the locus of points the difference of whose distances from two straight lines drawn through the same point is constant.

Let AB, AC be the two given straight lines. Draw DE parallel to AB and at a distance from it equal to the given constant difference, D being the point in which DE cuts AC . Bisect the angle EDC by DF . Then DF is the required locus. For perpendiculars from any point in DF on DE, DC are equal, and hence the perpendicular from this point on AB is greater than the perpendicular AC by the required constant excess.

D. J. S. asks for solution of following: There are two blocks on opposite sides of a street, the height of one being 110 ft., and that of the other 120 ft. A ladder is placed somewhere between the two blocks, and it is found to exactly reach the top of one block; it is then turned over (its foot remaining in the same position), and it is found to just reach the top of the other block. It is also found that the ladder reaches exactly across the tops of the blocks. Shew how to determine the length of the ladder and breadth of the street, by aid of Euclid and Arithmetic.

Let x = length of ladder; y = breadth of street. Then y = sum of distances from foot of ladder to blocks

$$= \sqrt{x^2 - (110)^2} + \sqrt{x^2 - (120)^2}.$$

Also, since ladder reaches across tops of blocks, $y^2 + (10)^2 = x^2$,

$$\text{Hence } y = \sqrt{y^2 - 12000} + \sqrt{y^2 - 14300}.$$

Squaring this, simplifying, and squaring again, it reduces to a biquadratic of the form of an ordinary quadratic, from which y is obtained, and thence x .

W. S. H. asks is there any known method by which the following problem can be solved by pure geometry: To cut off from a given arc of a circle a part equal to a given straight line not greater than the arc.

The problem is evidently in the same category as the rectification of the circle, i. e., finding a straight line equal to the circumference of a circle or to a part of it; indeed the one is the converse of the other, and it is conceivable that means which would accomplish the solution of the one would effect that of the other. If, however, we could rectify the circle, we could "square the circle." We have therefore to reply to W. S. H. in the negative.

"Teacher" asks for solution of following: Four ladies bought a ball of silk, 5 inches in diameter; how much of the diameter must each wind off to share the silk equally?

If r be the radius of a sphere its volume is $\frac{4}{3}\pi r^3$, where $\pi = 3.14159$

Let r_4, r_3, r_2, r_1 be the radii of the ball when each begins to unwind, so that $r_4 = 2\frac{1}{2}$.

$$\text{Then } \frac{4}{3}\pi r_4^3 = 4 \times \frac{4}{3}\pi r_1^3, \frac{4}{3}\pi r_3^3 = 3 \times \frac{4}{3}\pi r_1^3, \frac{4}{3}\pi r_2^3 = 2 \times \frac{4}{3}\pi r_1^3.$$

$\therefore r_1 = \frac{r_4}{\sqrt[3]{4}} = \frac{5}{2\sqrt[3]{4}}$, giving r_1 ; thence r_2, r_3 may be obtained. The first winds off $r_4 - r_3$, second $r_3 - r_2$, third $r_2 - r_1$, and fourth has what is left.

"Teacher's" second problem is unintelligible: he must state it again.

C. E. K. asks for solution of following, given on page 106 of H. Smith's Statics: If the beam to which the strings are attached be

fixed at one point only, about which it is capable of revolving, and there are only two moveable pulleys, find the position of the point in order that the beam may remain horizontal.

C. E. K's trouble must be with the answer Smith gives. He will see, however, on examination, that Smith supposes there to be no fixed pulley. If there be a fixed pulley, the point must divide the distance between the fixed pulley and the position Smith gives in the ratio of 8 to 2, being farther from the fixed pulley.

J. H., Islington.—You will find the solution of your problem in the July (1879) number of the JOURNAL, 2 on page 155. We do not think it will be well for you to waste your time in trying to obtain a so-called Arithmetical solution.

W. S. Howell, of Sombra, has given the following neat solution of Problem 7, in Arithmetic for First Class, given in September number: Diff. between sp. gr. of gold and mixture = $19 - 7 = 12$. Diff. between sp. gr. of mixture and quartz = $7 - 2.6 = 4.4$. Hence the proportion of gold to quartz is $4.4 : 12$, or $11 : 30$. He has also called attention to a misprint in solution to second part of problem 1 of the same paper ($\sqrt{.001}$ should be $3\sqrt[3]{.001}$), and has given a solution of this problem.

FOR SOLUTION.

Mr. R. H. Cooper, of Dixon, Ill., sends the following:

1. On a level floor are placed three balls whose diameters are 16, 20 and 28 inches, each touching the other two; and on the top of these is placed a fourth ball 18 inches in diameter. How far is the highest point of this last ball above the floor?
2. A circular army, two miles in diameter, marches due east at the uniform rate of 8 miles an hour. An officer starts from the rear of the army and rides round it at the uniform rate of 7 miles an hour, keeping close to the army all the while. How far will the officer ride in going once round the army?
3. A dog in the circumference of a circular field 40 rods in diameter gives a direct and uniform chase to a rabbit 85 degrees before him. Required the distance run by the dog when the rabbit is caught, the rabbit keeping all the time in the circumference, and their speed being as 51 to 50.
4. There are three circles 20, 40 and 160 feet in diameter respectively. The centres of the two smallest are 240 feet apart, those of the largest 420 feet apart, and those of the largest and smallest 860 feet apart. Required the diameter of a fourth circle which shall be tangent to all the others, being between them.
5. A tub is filled to the brim with 40 gallons of cider, and set under a spout from which water is running at the rate of three gallons per minute. Required the quantity of cider remaining in the tub at the end of 15 minutes, supposing the two fluids to mingle perfectly.

NOTE ON THE BINOMIAL THEOREM.

MR. EDITOR,—Allow me to call your attention to a demonstration of the Binomial Theorem for positive integers, given by Bo-billier, which, though very simple and lucid, is not very generally known. It does not involve the subject of Permutations and Combinations, and hence in order to understand the proof the student is not obliged previously to master a number of propositions in the above subject (See Analyst, Vol. I., Page 177). It would therefore seem very desirable that this demonstration should find a place in our text-books, and be taught in our schools.

For the benefit of any of your readers who may not be familiar with the notation employed, I will state that $n!$ (factorial n) is an abbreviated way of writing $1.2.3\dots n$, that is, the product of the natural numbers from 1 to n inclusive, thus $1! = 1$, $2! = 1.2 = 2$, $3! = 1.2.3 = 6$; $4! = 1.2.3.4 = 24$; &c.

The demonstration is as follows :

The three following identities will be evident on inspection, viz.:

$$\frac{(x+a)^1}{|1|} = \frac{x}{|1|} + \frac{a}{|1|}$$

$$\frac{(x+a)^2}{|2|} = \frac{x^2}{|2|} + \frac{x}{|1|} \cdot \frac{a}{|1|} + \frac{a^2}{|1|}$$

$$\frac{(x+a)^3}{|3|} = \frac{x^3}{|3|} + \frac{x^2}{|2|} \cdot \frac{a}{|1|} + \frac{x}{|1|} \cdot \frac{a^2}{|2|} + \frac{a^3}{|3|}$$

It is now proposed to find the expansion of $\frac{(x+a)^n}{|n|}$ when n is any positive integer.

In the above the following laws hold :

(1). The number of terms on the right hand is greater by 1 than the exponent of $x+a$ on the left.

(2). The exponent of x in the first term is the same as the exponent of the power to which $x+a$ is raised, and in each succeeding term the exponent of x is less by unity than that in the preceding term, while the exponents of a follow the same law beginning at the other end of the series.

(3). Each power of x or of a has for denominator the exponent taken factorially.

We shall now prove that these laws hold whatever positive integral value be assigned to n .

Suppose the laws to hold when the exponent is $n-1$, that is, suppose

$$\frac{(x+a)^{n-1}}{|n-1|} = \frac{x^{n-1}}{|n-1|} + \frac{x^{n-2}}{|n-2|} \cdot \frac{a}{|1|} + \frac{x^{n-3}}{|n-2|} \cdot \frac{a^2}{|2|} + \dots + \frac{x^{n-r-1}}{|n-r-1|} \cdot \frac{a^r}{|r|} + \dots + \frac{a^{n-1}}{|n-1|}$$

Now multiply this identical equation by the following also identical, member by member, viz.,

$$\frac{x+a}{n} = \frac{x}{n} + \frac{a}{n},$$

and as the result of the multiplication we shall obtain the following:

$$\frac{(x+a)^n}{|n|} = \frac{x^n}{|n|} + \frac{x^{n-1}}{|n-1|} \cdot \frac{a}{|1|} + \frac{x^{n-2}}{|n-2|} \cdot \frac{a^2}{|2|} + \dots + \frac{x^{n-r}}{|n-r|} \cdot \frac{a^r}{|r|} + \dots + \frac{a^n}{|n|} \quad (1).$$

Hence if the above laws hold for an exponent $n-1$, they hold for the exponent n , which is greater than the former by unity; but they have been proved to hold for the exponent 3, hence they hold for 4, hence for 5, and so generally, *i.e.*, they are true in the case of any positive integral exponent.

Now multiply both members of (1) by $|n|$, and we obtain

$$(x+a)^n = x^n + nx^{n-1}a + \frac{n(n-1)}{|2|}x^{n-2}a^2 + \dots +$$

$$\frac{|n|}{|n-r|}x^{n-r}a^r + \dots + a^n, \text{ which is the Binomial Theorem.}$$

G. SHAW, Kemble, Ont.

ON FACTORING TRINOMIALS.

Six:—I have been accustomed to use in my classes, for some years past, a method of factoring which I have never seen in textbooks on Algebra, and which may, therefore, be new to many of your readers.

Let us multiply any two binomials, *e.g.*, $2a+3b$ and $3a-2b$

$$\begin{array}{r} 2a + 3b \\ 3a - 2b \\ \hline 6a^2 + 9ab \\ - 4ab - 6b^2 \\ \hline 6a^2 + 5ab - 6b^2 \end{array}$$

The result is the trinomial $6a^2+5ab-6b^2$, and the problem is to factor this, or obtain from it the original binomials that produced it.

From an inspection of the process of multiplying, it will be seen that *before* addition there are *four* terms which appear as *three*, *after* addition. The first step in the process of factoring is to recover the four terms from the three. The four coefficients of these terms will always form a proportion ($6:9::4:6$) hence the product of the first and fourth equals the product of second and third. Now, in the trinomial the first and fourth terms appear unchanged, while we have the sum of the second and third. By multiplying 6 by -6 , we have, therefore, the product of two quantities, of which 5 is the sum; hence, we have only to ask: What two numbers multiplied together will give -36 , and added together will give 5? It is evident that 9 and -4 are the only two numbers, hence, instead of the middle term of the trinomial $5ab$, we insert $9ab-4ab$, making altogether

$$6a^2+9ab-4ab-6b^2.$$

Factoring we have

$$3a(2a+3b) - 2b(2a+3b)$$

$$\text{or } (3a-2b)(2a+3b).$$

Again, take the trinomial

$$4a^2-7ax-15x^2.$$

Multiplying 4 by -15 gives -60 ; we have then only to ask, what two numbers added together will give -7 , and multiplied will give -60 . The answer is -12 and 5, hence we have

$$4a^2-12ax+5ax-15x^2,$$

$$\text{or } 4a(a-3x)+5x(a-3x),$$

$$\text{or } (4a+5x)(a-3x) \quad \text{Q. E. F.}$$

This method will solve any trinomial composed of two binomial factors. It consists in simply inserting the terms that originally appeared in the multiplication, but which have disappeared in collecting.

ALBERT COLDWELL.

Horton Collegiate Academy,
Wolfville, N.S., Nov. 1879.

Practical Department.

* * The articles: Primary Lesson in Number, First Steps in Written Language, and The Recitation, in the December JOURNAL, were selected from the Primary Teacher, an excellent monthly published by Mr. T. W. Bicknell, Editor of the New England Journal of Education.

SOME POINTS IN ALGEBRAIC FACTORING.

II.—BY J. A. MCLELLAN, M.A., LL.D.

1. To factor expressions which can be reduced to the form $af(x)+bF(x)$. When an expression can be thrown into this form, it is evident that any factor common to a and b , or to $f(x)$ and $F(x)$, will be a factor of the whole expression. The method about to be illustrated will be found useful in factoring expressions in which some letter occurs in only *one* power; for we have merely to group together all the terms involving this letter, and form all the other terms into a second group, and we shall readily discover the factors common to the two groups.

Example 1. Factor $abx^2-(b^2+ac)x+bc$. In this case we see that only one power of b occurs, we therefore form into one group

all the terms involving b , and into another group, the remaining terms: this gives

$$-c(ax-b) + abx^2 - b^2x, \text{ or}$$

$$-c(ax-b) + bx(ax-b), \text{ and hence we have}$$

$$(ax-b)(bx-c) \text{ for the required factors.}$$

2. Factor $b^2x^2 - bcm^2x - bcx + c^2m^2$.

In this example m occurs in only a single power (m^2); we therefore form into one group all the terms involving m^2 , and the other terms into a second group, getting

$$-m^2(bcx - c^2) + b^2x^2 - bcx, \text{ or}$$

$$-m^2c(bx - c) + bx(bx - c), \text{ and therefore}$$

the given expression = $(bx - c)(bx - m^2c)$.

3. Factor $2x^4 - 3b^2x^2 - 2a^2x^2 + 3a^2b^2$.

We observe that this expression contains but one power (the second) of both a and b , and we may therefore, first form an a -group, or a b -group, at pleasure. Taking the former course we get

$$-a^2(2x^2 - 3b^2) + 2x^4 - 3b^2x^2, \text{ or}$$

$$-a^2(2x^2 - 3b^2) + x^2(2x^2 - 3b^2), \text{ which gives}$$

$$(2x^2 - 3b^2)(x^2 - a^2). \text{ Or, forming the } b\text{-group first}$$

we have

$$-b^2(3x^2 - 3a^2) + 2x^4 - 2a^2x, \text{ or}$$

$$-3b^2(x^2 - a^2) + 2x^2(x^2 - a^2), \text{ which gives}$$

$$(x^2 - a^2)(2x^2 - 3b^2) \text{ as before.}$$

In the above examples we have taken out, in the first step, only the letter which determined the grouping; but after a little practice, the student may at once take out of each group all the monomial factors common to the group.

4. Factor $a^2b^2 - ab^2x - (a^2 + 2b^2)x^2 + ax^3 + 2x^4$.

Here b occurs only in the second power, therefore $b^2(a^2 - ax - 2x^2) - x^2(a^2 - x - 2x^2)$, which gives $(b^2 - x^2)(a^2 - ax - 2x^2)$,

of which the trinomial can be resolved into $a + x, a - 2x$; hence the given expression

$$= (b + x)((b - x)(a + x)(a - 2x)).$$

5. Resolve into factors

$$2x^3y + 2bx^4 - bx^3y + 4abx^2y - x^2y^2 + 4axy^2 - 2abxy^2 - 2ay^3.$$

In this case both a and b occur in but one power, we may therefore commence with the a -group, or with the b -group: With the latter we have

$$bx(2x^3 - x^2y + 4axy - 2ay^2) + y(2x^3 - x^2y + 4axy - 2ay^2),$$

in which it is seen that the bracketed quantity is the same in each group, hence we have $(bx + y)(2x^3 - x^2y + 4axy - 2ay^2)$: Now the quantity in the brackets can be broken up into factors by the method under consideration. Taking together the terms which contain only the first power of a , and proceeding as in former examples, we have

$$2ay(2x - y) + x^2(2x - y), \text{ or}$$

$$(x^2 + 2ay)(2x - y). \text{ Hence the given expression}$$

$$= (bx + y)(x^2 + 2ay)(2x - y).$$

Sometimes expressions which do not come directly under the preceding form may be resolved in a somewhat similar way, i.e., by first finding the factors of its several parts.

6. $m^2x^2 + m^2y^2 - m^2xy - n^2xy$.

Here, taking m^2x out of the first and third terms we get $m^2x(mx - ny)$; and taking $-ny$ out of the second and fourth terms we get $-ny(-my + nx)$; and hence the factors are $(mx - ny)(nx - my)$.

7. Factor $x^{3m} + x^{2m} - 2$.

This can be put in the form $x^{3m} - 1 + x^{2m} - 1$, which plainly has the factor $x^m - 1$; the other factor therefore is

$$x^{2m} + x^m + 1 + x^m + 1 = x^{3m} + 2x^m + 2.$$

Similarly may be factored

$$x^{2m} - 4x + 8, x^4 - (a+b)x^3 + ab(a+b)x - a^2b^2, \text{ \&c.}$$

(5) A simple principle connected with the Theory of Divisors is of frequent use in factoring; it may be stated as follows:

If a quantity has $x - a$ (c.g.) for a factor, it will vanish when $x - a$ vanishes, i.e., when $x = a$. Conversely, if a quantity vanishes when $x - a$ vanishes (i.e., when $x = a$), it has $x - a$ for a factor.

1. Find the factors of

$$(a+b+c)(ab+bc+ca) - (a+b)(b+c)(c+a).$$

1st. Observe that the expression is symmetrical with respect to a, b, c .

2nd. If there be any monomial factor a must be one. Putting $a=0$, the expression vanishes. $\therefore a$ is a factor, and therefore, by symmetry, b and c also are factors.

3rd. There can be no other literal factor; because the given expression is of but three dimensions, and abc is of three dimensions.

4th. But there may be a numerical factor, m suppose, so that we must have $(a+b+c)(ab+bc+ca) - (a+b)(b+c)(c+a) = mabc$.

To find m put $a = b = c = 1$ in this equation, and we have

$$8 \times 3 - 2 \times 2 \times 2 = m(1 \times 1 \times 1), \text{ or } m = 1,$$

\therefore the given expression = abc .

2. Resolve $a^2(b-c) + b^2(c-a) + c^2(a-b)$.

1st. For $a = 0$ this does not vanish; $\therefore a$ is not a factor, and by symmetry, neither is b nor c .

2nd. Try a binomial factor; this will likely be of the form $b - c$. Put $b - c$ (i.e., $b = c$) in the given expression and there results

$$a^2(c-c) + c^2(c-a) + c^2(a-c), \text{ which } = 0,$$

$\therefore b - c$ is a factor, and by symmetry $c - a$, and $a - b$ are factors.

And since the given expression is of only three dimensions, there can be no other literal factor; but there may be a numerical factor, m say, so that we must have

$$a^2(b-c) + b^2(c-a) + c^2(a-b) = m(a-b)(b-c)(c-a).$$

To find m give a, b, c in this equation any values which will not reduce either side to zero, let $a = 1, b = 2, c = 0$, and we find $m = -1$, so that the required factors are $(a - b)(b - c)(a - c)$.

3. Solve the equation

$$(x+a+b)^3 - (a+b)^3 - (x+b)^3 - (x+a)^3 + x^3 + a^3 + b^3 = 6abc.$$

Here, instead of expanding, &c., we may apply the above principle to factor the left-hand member of the equation. We see that it is symmetrical with respect to x, a, b ; that it vanishes for $x = 0$, and therefore by symmetry for $a = 0$, and $b = 0$, so that it must be of the form $mabx$; put $a = b = x = 1$, and m is at once found to be 6,

$$\therefore 6abx = 6abc, \text{ and } x = c.$$

In a future number of the JOURNAL we shall extend the principle to more difficult examples in factoring, &c.

MISTAKES IN MANNER.

BY JAMES HUGHES, INSPECTOR OF PUBLIC SCHOOLS, TORONTO.

It is a mistake to scold. To do so merely irritates a class at first, and excites their ridicule and contempt afterwards. No person tells the exact truth when he scolds; and it is a bad thing for a teacher to get credit for making unjust accusations, or saying what he does not really mean.

It is a mistake to threaten. Penalties should be learned practically. If a teacher makes threats that a certain punishment shall follow the doing of certain things, he robs himself of one of his highest prerogatives: the power of adjusting punishment to the peculiar circumstances of each individual case. The very making of a threat erects a barrier between the teacher and his class which prevents sympathy between them. It clearly implies that he doubts their honesty of purpose.

It is a mistake to grumble. Pupils may occasionally deserve censure. Their intentional faults should always be corrected and the errors resulting from accident or inexperience should always be clearly and fearlessly pointed out. They will not improve either in lessons or conduct so long as they are not shown to be defective in these respects. Grumbling is, however, quite a different matter. Complaining soon becomes a habit, and when done mechanically it loses its effect. Martin Luther says, "I blame those teachers who make of their school a place of torment and misery, and never cease to blame their pupils instead of instructing them."

It is a mistake to be hasty. He who loses control of himself loses at the same time the power to control others. The man of calm, even temper, who holds his head erect, walks in a dignified manner, looks unembarrassed, and speaks deliberately, rarely has any trouble in managing a school. The confident man is ever cool. "Excitability and haste weaken the teacher's influence; impair the accuracy of his judgment; complicate his administration of discipline; occasion positive injustice; and stimulate and strengthen, both by example and direct collision, the fierce passions of the pupils."

It is a mistake to show lack of animation and enthusiasm. Lifeless teaching does not secure attention or stimulate mental activity. The pupils will insensibly grow like the teacher. The men and women who accomplish great good are those who have energy and enthusiasm. Let the teacher be in earnest; let him show that he believes what he does to be worth doing well. The "unconscious tuition" of good teachers is often the best gift they ever give their pupils.

The teacher must not mistake a noisy, fussy, demonstrative manner for enthusiasm. Enthusiasm is earnestness without undue excitement.

It is a mistake to be cold and formal. No teacher can succeed without the sympathy of his class. To secure this, the teacher must be genial and cheerful, as well as straightforward. The sunshine of a teacher's face, and the "song-shine" of his tone and words can penetrate the darkest recesses of a child's nature, and they often develop germs of power and beauty of character, which would have died for lack of nourishment or grown to be but sickly plants in the darkness. The winds of censure, scolding and grumbling, and the snows of the barren hills of formality, and indifference, only serve to make the timid nature of the child shrink and hide. Kindness in word and manner, a genuine interest in the thoughts, feelings and circumstances of a child, and the warmth of an affectionate nature, will bring out the tender buds of sweetness of temper and purity of heart, and make them grow into the most beautiful flowers of a noble character. A genial manner will enable the teacher to deal with the thousand petty annoyances of the school-room, without allowing them to develop into great difficulties.

It is a mistake to assume to be immaculate. The teacher ought to know all that his circumstances will permit in relation to the subjects he has to teach. He ought also to study the subjects related to them, so that he may not have to show his lack of general knowledge too frequently. He is lacking in common sense, however, if he professes to be an encyclopædia. A mere storehouse for knowledge is of little practical value. It is desirable that pupils should have a respect for the teacher's acquirements, but it is of much greater consequence that they have a profound veneration for his honesty. Some teachers sacrifice the good opinion of their pupils in a weak attempt to get credit for having more wisdom than they really possess. It would be much

more dignified for them to acknowledge a deficiency of knowledge than show a want of candor.

The attempts made by teachers sometimes to conceal their lack of knowledge, are exceedingly ridiculous. A class in charge of a student teacher was reading Moir's poem "To a Dying Infant" in the Provincial Model School, Toronto. The lines—

"Yes, with the quiet dead,
Baby, thy rest shall be;
Oh! many a weary wight,
Weary of life and light,
Would fain lie down with thee"—

had just been read, when a boy asked the meaning of "wight." The student had evidently labored under what once was a popular delusion, that it was not necessary to prepare a reading lesson. It was clear that he did not know the meaning of the word; but with the assumption of the air of one who "knoweth all," and who is just considering "how best to explain it," he said, as he read it over quickly to himself, in order if possible to catch the meaning from the context, "Wight?—ah yes—the word at the end of the line?—yes—I am glad you called my attention to it—that is a misprint boys; it ought to be w-h-i-t-e. You see this little dying infant was a colored child, and the poet means that some white people are so tired of living, that they would even be willing to lie down beside a little negro to get rid of their troubles.

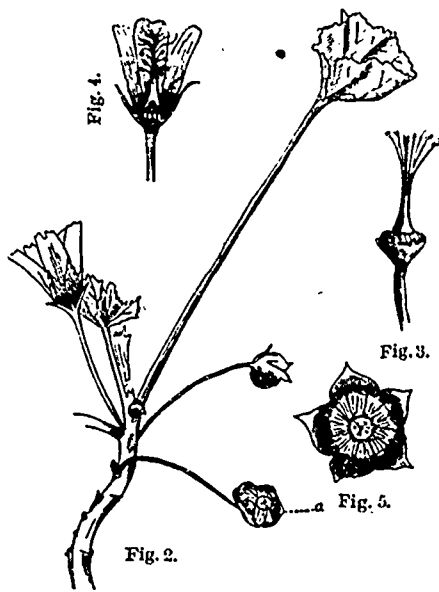
BOTANY IN THE SCHOOLS.—IV.

BY H. B. SPOTTON, M.A.

In previous numbers hints have been given as to the manner in which the examination of common plants might be conducted, the most suitable plants to begin with being those of the Crowfoot Family, as neither cohesion nor adhesion of parts is exhibited by these plants as a general thing, and there is consequently less to stand in the young observer's way. As soon as the teacher is satisfied that his pupils have become familiar with the organs of the flower as exemplified in plants like the Buttercup, Marsh-Marigold, Hepatica, Anemone, &c., and that they can readily set down descriptions of such flowers in botanical language, he should present to their notice plants in which some slight departure from previously observed conditions is manifested. For instance, let each pupil be provided with a specimen of the Round-leaved Mallow, a plant which is abundant along every Canadian wayside. The whole of each plant should be taken up. First draw the attention of the class to the form of the root. They will easily see that



in this case the root, instead of consisting of fibres, is, in the main, a single stout piece, tapering as it descends (Fig. 1). This difference having been observed, the name *tap-root*, applied to such forms as the present one, should be announced, and the class might be asked to suggest other examples of similar forms which may have come under their notice. The roots of the Carrot, Radish, Dandelion, &c., &c. will be familiar to all. The stem of the Mallow will not require any special notice, but the pupils should be asked to look for a new feature in regard to the leaves. They will not be long in discovering a couple of small leaf-like attachments at the junction of the petiole with the stem (Fig. 2). These *stipules* are of considerable importance in distinguishing plants, and their presence or absence must be carefully noticed. The pupils will now have become acquainted with all the parts that any leaf has, *blade*, *petiole* and *stipules*. The calyx of the flower is the next thing in order. How does this calyx compare with that



of Buttercup? It seems to be made up of five sepals, but, unlike the Buttercup, these sepals are not separate. For about half their length they adhere (Fig. 2), forming a cup, so that this calyx is *gamosepalous*. The upper halves of the sepals constitute the *calyx-teeth*. Then it may be noticed that this calyx does not fade away when the other parts of the flower disappear; it is therefore said to be *persistent* (Fig. 2 a). The petals of the corolla are separate as in the Buttercup, but they are united

with the stamens at their base. The stamens present a novel feature—all the filaments cohere, forming a tube (Fig. 3). In all such cases the stamens are *monadelphous*. As the tube of filaments springs from the receptacle, the stamens are of course *hypogynous*, as in the Buttercup. This tube should now be carefully split with the point of a needle, and the stamens removed without injuring the pistil. The latter organ will then be found to consist of a *ring of coherent carpels*, a stout style, and numerous long stigmas (Fig. 4). Let the pupils count the stigmas and the carpels, and observe that the numbers correspond. If a specimen is to be had in which the seeds have ripened, it will be noticed that the carpels have separated from each other (Fig. 5).

To sum up our observations, the Mallow, whilst resembling the Buttercup in having net-veined leaves, petioles distinct from the blade, calyx and corolla of five parts each, yet presents a good many differences, and these differences have been found to be mostly in the *cohesion of parts of the flower*. The differences, in short, are sufficiently marked to form the basis of a new family. The pupils will see at once the resemblance between the Garden Hollyhock and the Mallow, and will understand why these plants are members of the same family.

EXAMINATIONS FOR ADMISSION TO ONTARIO HIGH SCHOOLS, DECEMBER, 1879.

ARITHMETIC.

TIME—THREE HOURS.

Examiner—J. J. TILLEY.

Values:

- 14 1. A man has 708 ac. 3 roods 22 sq. rods 14½ sq. yds.; after selling 19 ac. 1 rood 30 sq. rods 2½ sq. yds., among how many persons can he divide the remainder so that each person may receive 45 ac. 2 roods 20 sq. rods 25 sq. yards?
- 14 2. Find the price of digging a cellar 41 ft. 3 in. long, 24 feet wide and 6 feet deep at 20 cents per cubic yard.
- 14 3. The fore wheel of a waggon is 10½ ft. in circumference, and turns 440 times more than the hind wheel, which is 11½ ft. in circumference; find the distance travelled over in feet.
- 14 4. $\frac{8\frac{1}{2} - 1\frac{1}{8} \text{ of } \frac{2}{3} + 8}{\frac{1}{12}(8\frac{5}{12} + 8\frac{7}{12} - \frac{7}{12} + 8\frac{7}{8})} \div .05 - .005 \div .25 \div .5$

- 14 5. Find the total cost of the following:—
 2745 lbs. of wheat at \$1.20 per bush.
 867 " oats " 0.85 "
 1986 " barley " 0.60 "
 1640 " hay " 8.00 per ton.
 2675 ft. of lumber at 10.00 per 1000 feet.
- 14 6. If, when wheat sells at 90 cents per bush., a 4 lb. loaf of bread sells for 10 cents, what should be the price of a 3 lb. loaf when wheat has advanced 45 cents in price?
- 16 7. At what price must I mark cloth which cost me \$2.40 per yard, so that after throwing off ¼ of the marked price I may sell it at ¼ more than the cost price?

ENGLISH GRAMMAR.

TIME—TWO HOURS.

Examiner—JAMES HUGHES.

Values.

- 6 1. Define—Comparative Degree, Conjunction, Gender, Participle, Relative Pronoun and Subjunctive Mood.
- 44 2. Parse—"The Spaniards employed coastguards to keep off interlopers, the commanders of which were instructed to massacre all their prisoners."
- 15 3. Analyze—"After the banquet, a shower of scented water, scattered from invisible pipes, spread perfume over the apartment."
- 12 4. Correct the following, and give reasons for making the changes necessary:—
 (a). I am not sure but that it is right.
 (b). I will not go, except you promise to come too.
 (c). He is more cleverer than any one I ever seen.
- 12 5. Give the past participle of *go, have, lay* (to place) and *drink*; the feminine of *earl, stag* and *miser*; the plural of *medium, wharf* and *scarf*; and the possessive plural of *mechanic* and *lady*.
- 10, i.e. 6. (a) Give six rules for the use of capital letters.
 6+2+ (b) Inflect *which*.
 2 (c) Inflect *to see*, in the future passive indicative.

COMPOSITION.

TIME—ONE HOUR AND A QUARTER.

Examiner—J. C. GLASHAN.

Values.

- 12 1. Make a simple sentence upon each of the following words:—Crocodile, flower, railway, Nelson, truth, temperance, chirp, tremble, conquer, siege, fierce, candid.
- 8 2. Combine into a single sentence—A crow had seized a piece of cheese. It flew up into a high tree. It quietly prepared to enjoy its repast.
- 6, i.e., 2x8 3. Arrange each of the following sentences correctly:—
 Wolsey left at his death many buildings which he had begun, in an unfinished state.
 It is folly to pretend to protect ourselves against the accidents of life by heaping up treasures, which nothing can guard us against.
 A romantic village was situated on the slope, composed of ten or a dozen neat cottages.
- 6, i.e., 4. Improve the following sentences by avoiding the repetition of related words:—
 The abilities, as well as the virtues, of King Alfred justly entitled him to the title of the Great.
 Wellington was anxious to be relieved from all anxiety in that quarter.
- 11, i.e., 8+3 5. Render in good English—
 A fox was passing through a vineyard and so he saw some fine bunches of grapes on one of the trees; so he tried to reach one of them, but it hung very high and he could not get it.
 Nothing is more effectual as a destroying agency no means so sure as that of time.

- 18 6. Combine the following sentences so as to form a connected narrative:
 Two young bears left their native woods. They came to a bee-hive. The bee-hive was well stored with honey. They were delighted with their discovery. They hastily overturned it. They began to eat voraciously. The bees were not to be deprived of the fruits of their labour with impunity. They flew about the bears. They stung them severely in the ears. They stung them severely in the eyes. The bears endeavoured in vain to repel the attacks of their nimble foes. They were at last forced to retreat to the woods. They were maddened with the pain. They were blinded with rage. Their sufferings at last subsided. They had leisure to reflect upon their conduct. They lamented their folly. They resolved to profit by their sad experience. Pleasure is often bought with pain.

16 7. Tell the following in prose:—
 In Grecian annals it remained untold,
 But may be read in Eastern legend old,
 How, when great Alexander died, he bade
 That his two hands uncovered might be laid
 Outside the bier, for men therewith to see—
 Men who had seen him in his majesty—
 That he had gone the common way of all,
 And nothing now his own in death might call;
 Nor of the treasures of two empires aught
 Within those empty hands unto the grave had brought.

DICTATION.

TIME—TWENTY MINUTES.

Examiner—J. C. GLASHAN.

Fourth Book of Reading Lessons, page 129, last paragraph. Value, 22. Two marks off for each word mis-spelled.

ENGLISH HISTORY.

TIME—ONE HOUR AND A HALF.

Examiner—S. ARTHUR MARLING, M.A.

Values.

- 12 1. Tell how the Roman conquest of England was brought about, and what were the principal changes effected by it in England?
 12 2. Why is the reign of King John a very important period of English History? Explain fully.
 12 3. Give an account of the public life of Oliver Cromwell.
 12 4. Tell what is meant by the Revolution, the Restoration, the Reformation, the Parliament.
 12 5. Why is the power of the Sovereign now less than it was three centuries ago?
 12 6. Tell the principal events of the reign of George III.

GEOGRAPHY.

FOURTH BOOK AND SPELLING.

TIME—TWO HOURS.

Examiner—J. M. BUCHAN, M.A.

Values.

- 12 1. Tell what you know about the founding of English colonies in North America in the seventeenth century.
 2. "They throw themselves at the feet of Columbus with feelings of self-condemnation mingled with reverence. They implored him to pardon their ignorance, incredulity and insolence, which had created him so much unnecessary disquiet, and had so often obstructed the prosecution of his well-concerted plan; and passing, in the warmth of their admiration, from one extreme to another, they now pronounced the man whom they had so lately reviled and threatened to be a person inspired by Heaven with sagacity and fortitude far more than human, in order to accom-

plish a design so far beyond the ideas and conception of all former ages."—ROBERTSON—*The Discovery of America.*

- 4½ (i.) In what year was America discovered by Columbus? In whose service was he at the time, and how many vessels did he have with him?
 1½ (ii.) What part of America did he first discover?
 16½ (iii.) Explain the meaning in which 'implored,' 'incredulity,' 'prosecution,' 'well-concerted,' 'reviled,' 'inspired,' 'Heaven,' 'sagacity,' 'fortitude,' 'conception,' 'ages,' are used in the passage.
 8 (iv.) *Created him so much unnecessary disquiet.* To what does this refer? What was 'his well-concerted plan'?
 1½ (v.) *From one extreme to another*—What were the two extremes?
 1½ (vi.) *More than human*—What is understood after 'human'?

3. "The Red Man came,
 The roaming hunter tribes, warlike and fierce,
 And the Mound-builders vanished from the earth.
 The solitude of centuries untold
 Has settled where they dwelt. The prairie-wolf
 Hunts in their meadows, and his fresh-dug den
 Yawns by my path. The gopher mines the ground
 Where stood their swarming cities. All is gone;
 All,—save the piles of earth that holds their bones,
 The platforms where they worshipped unknown gods,
 The barriers which they builded from the soil
 To keep the foe at bay, till o'er the walls
 The wild beleaguers broke, and, one by one,
 The strongholds of the plain were forced, and heaped
 with corpses." —BRYANT—*The Prairies.*

- 3 (i.) *The solitude of centuries untold.*—Explain the meaning of *untold*. Parse it.
 6 (ii.) Explain the meaning in which 'yawn;' 'swarming,' 'beleaguers,' and 'forced' are used in this passage.
 4½ (iii.) What is meant by 'keep the foe at bay'—and 'the strongholds of the plain'? Who, according to Bryant, were the foe?
 1 (iv.) What is the gopher?
 5, i.e., 8+2 (v.) Point out the silent letters in—
 "The roaming hunter tribes, warlike and fierce;"

And in—
 "The platforms where they worshipped unknown gods."
 What final letter in the latter of these lines has a sound different from that which it usually has?

- 12 4. What is the difference in meaning between pine, the noun, and pine, the verb?
 rue, " rue, "
 crew, " crew, "
 mean, " mean, "
 fare, " fare, "
 row, " row, "
 rail, " rail, "
 hail, " hail, "
 ward, " ward, "
 blow, " blow, "
 mow, " mow, "
 peer, " peer, "

GEOGRAPHY.

TIME—ONE HOUR AND A HALF.

Examiner—GEO. W. ROSS.

Values.

- 5 1. Define meridian, water-shed, bay, frith and zone.
 12 2. What and where are Athabaska, Nelson, Chignecto, Restigouche, Gatineau, Temiscaming, St. Hyacinthe, Quinte, Chesapeake, Sacramento, Champlain, and New Orleans.
 8 3. Where do you find the following natural productions in greatest abundance: Cotton, copper, coal, coffee, tin, gold, furs and grapes?
 11 4. Say you embark at the Isle of Man on a voyage to the mouth of the Volga. Through what waters, and near what capes and islands would you pass?

- 20 5. Draw a map of the coast of Asia from Behring's Straits to Cape Comorin, showing all the important physical features with their names neatly printed upon them.
- 16 6. Locate the following: Obi, Papua, Zambezi, Tunis, Moroa, Cyprus; Venice, Lyons, Copenhagen, Borneo, Cheviot Hills, Crimea, Quito, Port-au-Prince, Trinidad and Loffoden.

PRACTICAL HINTS ON TEACHING.

LONG MULTIPLICATION WORKED WITH A SINGLE LINE OF FIGURES.

To the Editor of the Educational Times.

SIR,—If the following brief method of working Long Multiplication should prove to be new, I hope you may think it worth publishing:—

Suppose we wish to multiply 56248 by 8726. We set the sum in the usual way, thus:—

$$\begin{array}{r} 56248 \\ \times 8726 \\ \hline \end{array}$$

We then write out the upper line, backwards, on the lower edge of a separate slip of paper, placing a mark over the unit-digit, as a guide to the eye: with this slip we cover the upper line of the given sum, bringing the marked digit over the unit of the lower line, thus:

$$\begin{array}{r} 8726 \\ \hline 84265 \\ \hline 8726 \\ \hline \end{array}$$

We then take the product of the digits which are in the same vertical line (viz., 8, 6); this gives us 48; we write the unit of this (viz., 8) vertically under the scored digit, and "carry" the 4, thus:

$$\begin{array}{r} 84265 \\ \hline 8726 \\ \hline 8 \\ \hline \end{array}$$

We then shift the slip one place to the left, thus:—

$$\begin{array}{r} 84265 \\ \hline 3726 \\ \hline 8 \\ \hline \end{array}$$

We then add together the carried digit and the products of the digits which are in the same vertical lines, and write the result as before. The mental process being, "4+24=28, +16=44; set down 4 and carry 4."

$$\begin{array}{r} 84265 \\ \hline 8726 \\ \hline 48 \\ \hline \end{array}$$

We then shift the slip again, and proceed as before; the mental process being, "4+12=16; +8=24; +56=80; set down 0 and carry 8."

$$\begin{array}{r} 84265 \\ \hline 8726 \\ \hline 048 \\ \hline \end{array}$$

We then shift the slip again, and so on; the last step being reached when the sum stands thus, with 5 to carry:

$$\begin{array}{r} 84265 \\ \hline 8726 \\ \hline 9580048 \\ \hline \end{array}$$

Hence the mental process of the last step is, "5+15=20; set it down." We then remove the slip, and the result appears thus:—

$$\begin{array}{r} 56248 \\ \times 8726 \\ \hline 209580048 \\ \hline \end{array}$$

A similar method will serve for multiplying decimals; all we have to remember is, to bring the marked digit of the slip vertically over whatsoever decimal place we wish to carry the working to. For example, if we wish to multiply together .68624 and .25878; and if, in order to have the answer correct to 8 places, we wish to carry the working to 4 places, we set the example thus:—

$$\begin{array}{r} 0.68624 \\ \times 0.25878 \\ \hline \end{array}$$

We then write 426360 on a separate slip of paper, and place it so that its marked digit comes vertically over the 4th decimal place in the answer, thus:—

$$\begin{array}{r} 42.6\ 60 \\ \hline 0.25878 \\ \hline \end{array}$$

The mental process of the first step will be, "0+48=48; +15=63; +12=75; set down 5 and carry 7."

$$\begin{array}{r} 42.6360 \\ \hline 0.25878 \\ \hline 5 \\ \hline \end{array}$$

We then shift the slip to the left and proceed as before, the last step being reached when the sum stands thus, with 1 to carry:—

$$\begin{array}{r} 42636.0 \\ \hline 0.25878 \\ \hline 685 \\ \hline \end{array}$$

Hence the mental process of the last step is "1+0=1; set it down." We then remove the slip, and the result appears thus:—

$$\begin{array}{r} 0.57624 \\ \times 0.25878 \\ \hline .1685 \\ \hline \end{array}$$

Hence the answer, correct to 8 places, will be .164.

This method seems to me not only to save space and time, but also to avoid the risk of mistakes involved in writing all the intermediate lines of figures required in the old method, as well

as the constant risk of losing one's place while carrying the eye obliquely from one figure to another figure several rows above it.

Your obedient servant,
CHARLES L. DOBSON,
Senior Student and Mathematical Lecturer
of Christ Church, Oxford.

ON SCHOOL METHODS.

In his outlines of a course of lectures on the "Science and Art of Teaching," Professor W. H. Payne, professor elect to the new Chair of Education lately established in the Michigan University, gives the following:

"One grand purpose of primary instruction should be to teach the art of interpreting language and expressing thought."

The type of school work is the acquisition of accumulated knowledge rather than that of original knowledge; the use of books rather than attempts at discovery.

As the typical work of schools is the imparting of accumulated knowledge, the teacher's typical method should be the method of instruction as distinguished from the method of discovery: 1. The method of instruction applies when knowledge has already been acquired and expressed in the form of general laws, rules, principles, or truths. 2. The method of discovery is employed in the acquisition of knowledge, and really consists in those processes of inference and deduction by which general truths are ascertained from the collection and examination of particular facts. [Jevons.] 3. The method of instruction employs language as its chief agent, and has for its chief purpose to put the pupil in possession of desirable portions of knowledge already acquired and systematized. 4. The method of discovery repeats in brief, the process by which knowledge was originally acquired; it is inductive in its procedure, and its purpose is to attain truth by rediscovery. 5. The method of instruction regards accumulated knowledge as so much assured capital that is to be transmitted to a new generation of learners without the cost of rediscovery. The learner is to accept the greater part of this on trust; only a limited part can be verified by personal experience. 6. The method of discovery assumes that the only real knowledge is that which is gained *de novo*, by personal experience; and would have each child repeat in brief the history of the race.

The method of discovery has necessary limitations that unfit it for the general purpose of education: 1. If it be applied systematically and thoroughly, it would limit the child's acquisitions to a very few of the most elementary notions. It would require several years' exclusive study by the method of discovery to attain a knowledge of chemistry that could be secured by the ordinary method of instruction within a few weeks. 2. The method of discovery is wholly inapplicable to history, applicable only to a very limited extent to geography, and, in actual practice, only partially applicable to mathematics and natural sciences.

While the typical method is the method of instruction, the method of discovery should be employed for purposes of illustration: 1. The method of discovery, by appealing directly to the senses, excites interest and enlists attention. It is therefore useful in introducing pupils to a new science; and, to all stages, in sustaining interest and attention. 2. The less the skill in interpreting language, and the weaker the power of reflection, the more necessary becomes the method of discovery.

The method of instruction sets out with a definition, a classification, a general law, an abstract truth, or a proposition, and then proceeds by way of explication—division: 1. "In Plato's Republic' (one of the noblest examples of method), successive definitions of justice are brought to the test and rejected; and the division preponderates, in the enumeration of the powers of the human soul, and of the classes in a state that answers to them.—Thompson. 2. The method of instruction is the classical method, the one employed by the great teachers of all ages for conveying ascertained truth. It is the only royal road to knowledge."

GOING TO SCHOOL.

If you are bound for a college, it will do you good to know, in advance, the best thing the best university can do for you. Probably any bright boy or girl, under private instruction, could obtain

as much valuable information in two years as even Harvard or Vassar are able to lodge in the brain of their superior graduates in four. But the one thing no private schooling, no training in a little, select seminary can do, is the most valuable use of university life.

That college is probably your first introduction to the actual world. It represents to you that variety of talent, that diversity of character, that wide difference in ideas and ideals of life which supplies the condition of all self-knowledge in every successful man or woman. You will there be lifted out of the atmosphere of home, the town school, the companionships of youth, the peculiar notions that make the public opinion of your native place. In short, you will probably realize there, for the first time, that you are at best one among a multitude of promising young people; are at best gifted with one angle of your nature; are destined to spend your life in conflict with others who excel you at every point save at this little angle of your real superiority.

So do not rebel at anything in college which takes down your conceit of yourself, or forces upon you the conviction that in the battle of life only the man who knows himself, and is willing to stand by himself and work out his own salvation, will succeed. Far better than all the knowledge in all the libraries is the discovery that you are but one in a world of people, each with some good outfit of nature, each standing in proportion as he is faithful to that outfit. And if you can learn, in four years, to be grateful especially to all people who reveal you to yourself; who "polish off" your exaggerated opinion of your own merits, and compel you to walk through the strait gate along the narrow way of your own proper ability, your college course will be justified and your graduation diploma will be a roll of honor.

Our own most valuable experience in college life was not a college honor, but a dishonor. We entered, from a country academy, with very decisive opinions of our own concerning the value of certain lines of study in the curriculum. Of course we neglected the special study that seemed to us a waste of time for an aspiring youth. Retribution always waits upon this type of students. Ours, happily, came on an autumn day of the first term. Called to our feet to recite, we were hit just in the line of our neglect, and so unmercifully exposed by our tutor that, in despair, we flung down our book, rushed out of the class-room, and spent the day in tears and self-abasement under the old chestnut-trees of the neighboring grove. But that day's sorrow was the birthday of our mental life. That day, it came to us, as if just spoken out of heaven, that we were not quite competent to lay out a course of college study; that the beginning of all success is loyalty to duty; that instead of being the head, it was possible we were at the tail of our class; that there is but one honorable gate out of college into life,—the gate of hard work. The young tutor who thus became the "means of grace" to a boy he has long forgotten, is now a famous man in a great city; but he will never do a better service to client or constituent than on that autumn day, when he revealed one "bumpitious" freshman to himself, and set one mere country youth on the highway to knowledge, reverence, and a consecrated life.—A. D. Mayo, in *New England Journal of Education*.

THINGS IN PIKEVILLE.

"The people do not seem to care what kind of persons are the teachers of their children," said the Principal as we were walking away from the school building. "There is Mrs. Smith Jenkins, who has just been appointed in the primary department—"

"How did she get her place?" I interrupted.

"Why, just like the rest of them. I am clerk of board of trustees, you know. Well, Dr. Smith, her brother, met me one day, and says he, 'There's my sister Mary, she's got to have a place in your school.' I replied, 'Lay it before the trustees.' 'Oh, yes, I know, but they'll ask you, and if you go against her, remember I'll go against you.'

"A petty threat," I replied, "when you had done nothing for or against."

"So I told him, but he only said it the more disagreeably."

"And was she appointed without asking whether she was going to make an efficient teacher?"

"Yes, sir."

"Had she had experience?"

"Not a day."

"Well, how does she get along?"

"She comes in at nine o'clock exactly, on a half-run, and of course her room is a bedlam, children running here and there; some scuffling and all screaming. She seizes a ruler and pounds on her table, and frisks and scolds until a little order is secured. Then she begins to hear her classes read. She has eighty pupils, and so she has to fly around. At recess she sits down and knits with the greatest assiduity, as though it was the only happy moment she had in the whole day."

"How do the scholars get along?"

"They don't make any progress except mechanically. She 'hears them read,' as she calls it, but doesn't teach them reading."

"Then you do not think she teaches at all—she only 'goes through the motions.'"—*N. Y. School Journal*.

—Lord George Hamilton, addressing the boys of the Church School, at Bolton, one day recently, gave them the sensible advice to try and speak English correctly. The advice to Lancashire lads is doubtless more needful than it is easy to follow; but Lord George was careful to say that he did not think it was wanted exclusively in remote provincial districts. He was bound to say that the House of Commons was no exception to the general rule of careless speaking. The utterances which were dignified by the name of speeches were very slovenly and very slatternly performances. It seems from the report that the boys cheered at this piece of information. He then proceeded to say that there was a very remarkable contrast between the speaking of the young men and that of the old men in the House, and the advantage was entirely in favor of the older generation. Lord George appears to mean by the old men the seniors at present in the House of Commons; but if he has formed his opinion on the speaking of the past in any degree from printed reports of speeches, it is well he should bear in mind that if speaking has deteriorated, reporting has deteriorated in at least an equal degree. Fifty years ago or less the gallery held itself responsible for the grammar at least of the members; to-day no such responsibility appears to be acknowledged, and the result is what we see every morning during the session—*Pall Mall Gazette*.

—There is not care enough taken on the part of many parents and teachers to be civil to children. Children are taught—or have been and ought to be—to be respectful to their parents and to older persons. But the converse obligation is not often enough insisted on or practised. There is no reason in this. If there be more in older persons to call forth respect, which may not always be true, there is also with them, or ought to be, more capacity for showing respect, more knowledge and judgment, and practice in courtesy. They are thus looked upon with propriety by the children themselves as models in this particular. The pattern is often a poor one. There are teachers in our schools who have yet much to learn in this matter. They will find themselves repaid, they may be sure, in many ways, apart from the public benefit, if they will be civil to their scholars after the most genuine fashion, and with most scrupulous care.

—The pecuniary reward is not all the model teacher receives; there is the future reward,—the abiding esteem of the pupils who have grown up to manhood and womanhood. Laborious industry and patient forbearance should be the motto adopted by the man or woman the moment they enter the portals of their noble profession—teaching. The cross, sour-visaged teacher is an iceberg stranded in a flower-garden, chilling all the beauty and brightness out of the happy flowers, and congealing the music in the very throats of the rejoicing birds. Again, insipid garrulity, unseemly familiarity of the teacher toward the scholars in and out of school, and undignified deportment generally should be avoided. There is a sensible, happy medium. The faithful, intelligent instructor understands this. Teachers have a joyous range; do they all realize it?—*C. T. Preston, of School Com., West Northfield, Mass.*

—In no occupation besides yours is there such pressing need of new thoughts, ideas, and illustrations; in none is there such a tendency to fall into "ruts,"—to do the same thing over and over in the same way, and to say the same thing over and over day after day. A wise teacher reasons as a woman does when she buys

a sewing-machine, or as a farmer does when he buys a mowing machine. He avails himself of the *thoughts and discoveries of others on education*; hence the importance of *educational publications*; they are the cheapest, readiest, and surest means a teacher can employ to keep himself and his class up *in front*. To be a first-class teacher, you must know what the most skilful of your profession would do if in your place.—*N. Y. School Journal*.

—A travelling agent of a St. Louis firm makes affidavit that the following is a literal copy of rules posted on a school-house in the interior of the State: "Each pupil is required to make a bow on entering the School-House of a morning also leaving of Evening the School Room. their shall be no profane language used in school or on the play ground nor there shall be no pin sticking, scratching, no tagging nor no fitting, nor no unesery whispering in school. No Pupill shall leave the school House without the permission of the Teacher. No unesery moving from seat to seat. No fitting on the road from or to school, nor no nick-naming. Every pupil over eight years is subject to those rules, and the teacher is to make the allowance for all pupils under eight years and enforce the rules according. If any scholar breaks these rules tha shall be punished by switchen."

—A few facts concerning the number of doctors in our country may be of interest to teachers, so we give them. In the United States there is one physician to 600 people; in Canada, 1 to 1,200; in Great Britain, 1 to 1,672; in France, 1 to 1,814; in Belgium, 1 to 2,048; in Austria, 1 to 2,500; in Norway, 1 to 3,480; and in Italy, 1 to 3,500. This number includes only those who have received diplomas from some regular medical college. It would be interesting if we could present similar figures in relation to the number of licensed teachers in the United States and the other countries of the world. We know the number of schools actually taught each year for at least three months, but we cannot tell how many qualified teachers stand ready to enter the school-room of our own and other countries.—*Barnes' Educational Monthly*.

SCIENCE NOTES.

New Theory of the Nature of Water.—M. Malche, in "Les Mondes," propounds the theory reached after numerous experiments, that water is simply hydrogen plus electricity, or oxygen minus electricity; or in other words, that normal electrified hydrogen constitutes water, and that normal diselectrified oxygen and water are precisely the same, differing only in degree of electrification.

It is the opinion of Professor A. R. Grote, expressed at the recent meeting of the Entomological Club at Saratoga, that the damage done by the employment of Paris-green is greater than that done by the potato-bug. This conclusion Professor Grote has reached after a careful study of the effects of Paris-green agriculturally employed. He has found cases of the poisoning, by this agent, of horses, cattle, sheep, poultry, and even human beings.

New Cure for Sea-sickness.—Dr. Laederick, of France, advocates the following plan for warding off sea-sickness by those predisposed to it:—Apply collodion with a brush in three layers on the epigastric region (over the stomach), and the neighboring parts. I also notice an Algerian journal of medicine offers advice on the same subject by M. Velasco. He says, use injections of 0.005 gr. and 0.02 gr. of morphine, and states that he has personally derived benefit from such treatment.

During an outbreak of scarlatina at Grantham, a town of Lincolnshire, England, nine tent-hospitals were set up in a field just outside the town. These tents were all lined, and had raised wooden floors, which were trenched round. A wooden building was erected to serve for wash-house, kitchen, dispensary, etc. A separate structure was put up for earth-closets. No provision was made for warming the tents, the season being mild. Patients were admitted on June 30th, and the tents were occupied during the eleven weeks following. Sixty-six patients, varying in age from eighteen months to thirty-eight years, were treated; six of the cases ended fatally.

Science at Oxford (England).—It is a sign of progress to find that

the importance of science has been at length recognized at Oxford University, and that the preamble of a statute for instituting a faculty of natural science, and for conferring degrees therein, was adopted recently by Convocation by 57 to 20 votes.

Making Sound-vibrations Visible.—A very ingenious method of recording articulate vibrations by means of photography has just been invented. The apparatus (says *Galvani's Messenger*) consists of a steel mirror capable of oscillations on a diametrical axis, to the back of which is attached a lever connecting it with the centre of a telephone disk arranged with an ordinary mouthpiece. Whenever the disk is made to vibrate, the mirror oscillates with it, and a beam of sunlight thrown on the reflector from a heliostat describes lines of light on a suitably prepared screen. If the latter be movable at right angles to those lines of light, and carries a collodion film, the oscillation of the light is recorded on the prepared surface as a more or less complex curve having the peculiarity of the sound-wave which caused each particular motion. Another and simpler phonoidoscope is suggested by a writer in *Nature*: it may be made without the aid of any apparatus whatever, by bending the forefinger and thumb of one hand so as to form a circle, and then with the other hand drawing over the aperture a film of soap-suds. By turning the wrist, the angle made with the direction of the light may be readily adjusted; a motion of the elbow alters the distance from the mouth, and the tension of the film can be exactly regulated by moving the thumb and finger. On singing or speaking to the film when in proper tension, beautiful figures appear, which may be reflected direct from the film on a screen. The experiment is extremely curious and interesting.

Important Discovery in Entomology.—Mr. Gray, of Albany, has been engaged in the study of our diurnal *Lepidoptera* for many years. He has made the discovery, as published in the *Canadian Entomologist*, that our Eastern species of *Limnitis*, four in number, are not distinct. They belong to a single plastic genetic group, of which *arthemis* is the most northern, *proserpina* intermediate between *arthemis* and *ursula*, and the red *disippus* the most southern. He has collected them in vertical altitudes on hills in the Middle States and New England, and has intermediary specimens half bluish and red between the two most strikingly contrasted species of the group *ursula* and *disippus*. This discovery is the most remarkable in the group announced since the recognition of the female form of *diana* by Mr. W. H. Edwards. In general interest it far surpasses that discovery, and we expect will be more generally noticed.

Notes and News.

ONTARIO.

A literary society has been formed in connection with Guelph High School.

The Toronto Public School Board has opened three night schools.

Mr. Alex. McFavish has been appointed mathematical master in the Guelph Agricultural College, in the place of Mr. Natrass, who has decided to enter the medical profession.

Miss Living, one of the teachers of the Ottawa Collegiate Institute, was presented with an address and testimonial on her resignation.

There are 1,285 pupils in attendance at the Guelph schools.

The Waterloo County Board of Examiners has decided to require all candidates in future to show some capacity for black-board work.

Sir Leonard Tilley presented the prizes to the successful pupils in Ottawa Public Schools at the close of last session.

The attendance at London Public Schools is 2,837.

There are 882 pupils in attendance at the schools of St. Thomas.

The Stratford School Board have appointed a committee to wait on Messrs. Hay and Ballantyne, M.P.P.'s, requesting them to urge on the Ontario Government the locating of a Normal School in Stratford.

The Public School Board of Listowel has given a decided approval of the question of teaching music in the public schools, by engaging Mr. B. B. Sarvis to instruct the pupils, at a salary of \$200 per annum.

In the London East schools the Anderson Gold Medal was won by Sarah Ann Dagh. The Waterman prize was awarded to Emily Dark.

A volunteer company has been formed in Peterborough Collegiate Institute.

Mr. Briggs has resigned his position as Principal of Smith's Falls High School.

Mr. O'Connor, late mathematical master in London Collegiate Institute, has been appointed head master of Harriston High School.

Mr. George Smith, B.A., has been appointed teacher of classics in Woodstock Canadian Institute.

Prof. Macdonald has resigned the rectorship of Albert College Grammar School, Belleville, in which he has been succeeded by Prof. Bannister. He will, however, continue to hold a professorship in the college.

The Perth High School Board offer \$5 in money and \$5 in books to each successful Intermediate candidate.

Mr. Alex. Steele, B.A., head master of the High School in Aylmer, is engaged to take charge of the Orangeville High School. A local paper thus speaks of his success in Aylmer: "The Board here had no thought of letting him go, as no other head master had given such universal satisfaction, but by some means the Orangeville Board has forestalled them. Mr. Steele has become a general favorite with his students, not only for his very superior attainments and his ability to advance them in their studies, but for his sterling integrity and highly moral influence."

Mr. James A. Stewart, M.A., having resigned his position in the Perth Collegiate Institute, the Board passed the following resolution: "This Board cannot sever their connection with him without bearing testimony to his valuable services as a thorough and painstaking teacher. At the inspections by the High School Inspectors, these gentlemen have always expressed themselves in high terms as to his capacity and aptitude in teaching. Mr. Stewart is a gentleman of high moral character, and this Board feel assured in expressing the belief that wherever his lot may be cast, he will acquit himself with satisfaction to those with whom he may come in contact, and creditably to himself."

The following are the officers of the London Teachers' Association:—President, J. B. Boyle, I.P.S.; Vice-President, A. C. Stewart; Secretary-Treasurer, Miss S. Hanson; Librarian, Alex. Watson; Management Committee, Messrs. Wright, Houston, Carson, McKay and Miss Cline; Library Committee, Messrs. Boyle, Carson, Checkley and Houston, and Miss Cline; Auditors, D. W. B. McKay and J. T. Colton.

The following is a list of the candidates who passed the professional examinations, December, 1879, at the Toronto and Ottawa Normal Schools, for second class certificates.—**TORONTO—Males.**—Peter Anderson, John Barr, Wm. L. Biggs, C. H. Britton, Edwin Bowes, S. W. Browne, John Buchanan, R. D. Cameron, Hy. Clay, William F. Cale, L. Davidson, J. McD. Duncan, Duncan A. Dobie, John H. Haun, W. H. Harlton, James Gibson Hume, Hy. Johnston, Alex. Johnston, Andrew Jackson, P. McEachern, J. D. McKay, James M. McKay, C. C. McPhee, Roderick McLennan, C. Mason, John D. Peters, Robert Park, Stanley Phelan, R. G. Potter, C. Sheldon, John Sinclair, Edward Slommon, Byron Smith, R. Stirrett, J. C. Stoneman, J. H. Thomson, Edward West, D. M. Williams, Henry A. Yenny. **Females.**—Amelia A. Bean, Elizabeth Carhill, Anna M. Capron, Carrie Cathcart, Mary Cameron, Nellie Delmage, Bessie Dent, Minnie Emery, Evelina Fansher, Sarah Franklin, Emily Garden, Jessie Grey, Christina Howes, Alice Inglis, Augusta Lambier, Minnie E. La Marche, Elizabeth P. McCausland, Sarah M. McKerrall, Louisa McDonald, Isabella Magee, Margaret A. Mills, Margaret M. Mitchell, Carrie Moore, Jessie Moscrip, Frances E. Noble, Euphemia Poole, Mary M. Reid, Lucy O. Seager, Jennie Short, Hattie Skelley, Isabella Smith, Julia Somerville, Jessie Stewart, Jessie M. Thomson, Maria Tomlinson, Mary Turnbull, F. Twohy, H. Twohy, Clara Trusler, Eliza Yates. **OTTAWA.—Males.**—Samuel Acheson, T. B. Anderson, O. Avison, Joseph A. Bicknell, W. H. Bingham, W. S. Brown, Fred. P. Burt, Chas. H. Campbell, John Campbell, N. W. Campbell, James P. Caldwell, J. P. Collins, J. Moore Conerty, R. G. Code, A. R. Davis, A. E. Doherty, D. B. Dowling, J. J. Elliott, C. E. Filkins, W. H. Grant, C. R. Gray, Jas. Hart, R. A. Harrington, Finlay Hicks, J. D. Houston, E. B. Howard, R. D. Irvine, Samuel A. Jackson, Wm. Keirstead, D. E. Kennedy, D. P. Killiher, John W. King, George Kimmerly, A. B. Kinsley, Arthur Lang, W. B. Lawson, T. H. Lennox, John C. MacPherson, A. McCalman, Obadiah McCullough, John N. McKendrick, W. McLellan, E. W. Maas, S. L. Martin, Ainsley Megraw, H. H. Moyer, Wm. Mill, A. C. Philip, John E. Pickard, I. W. Puffer, K. Robert Row, Thomas Swift, A. L. Vanstone, John Waugh, J. B. Weldon, E. W. Wright. **Females.**—Edith E. Beach, Emma Bell, Mary Black, K. A. Brown, Janet Burnnall, Anastasia Cahill, Eliza C. Campbell, Sarah Coone, Annie Creighton, Elizabeth C. Davidson, E. Dougan, Rosinda Fletcher, L. Gibson, Teresa E. McCarthy, Margaret McDougall, Margaret Mills, May Morrison, Kate Moon, Mada Pake, Hannah M. Paul, Janet Simpson, Ida Jane Stewart, Sarah E. Twamley, Elizabeth E. Turnbull, M. A. Walsh, Elizabeth Wickwaro.

Wm. O'Connor, M.A., late Mathematical Master in the London Collegiate Institute, has been appointed head master of the new High School at Harriston, at a salary of \$1,200. Mr. O.C. is justly regarded as one of our foremost teachers, and the Harriston people have done wisely in securing a first-class man from the start. D. E. Smith, B.A., Toronto University, is to be first assistant.

Wm. Steele, head master of Aylmer High School, has been appointed head master of the Orangeville High School. The Orangeville Trustees have made an excellent choice, and their school is sure of success under Mr. Steele.

NEW BRUNSWICK.

The Terminal Examinations of the University took place as usual about the middle of December, ending with a public oral examination on Thursday, the 18th. On this occasion a number of gentlemen interested in education were present, including senators of the University, members of the Alumni Council, several clergymen, the Principal of the Normal School, with one or two of his fellow-instructors, and others. At the close the students were addressed briefly by the Chief Superintendent of Education and by Bishop Medley (Metropolitan of Canada), and received from the venerable President their send-off for the holidays.

The public terminal exercises of Mount Allison College were held on the 13th December, when essays and orations were delivered by members of the Freshman and Sophomore Classes. The examinations were held previously, and those of the Academies on the 15th Dec., closing with a public exhibition of the Ladies' Academy.

The Public Schools throughout the Province closed for the Christmas vacation, pursuant to regulation, on the 23rd of December, to re-open on the 7th of January, except in the City of St. John, where, owing presumably to peculiar circumstances, the Trustees are at present empowered to give as vacation the whole of the week in which Christmas falls and the next following week. The half-yearly examinations in the St. John Grammar School were held just previous to the holidays, in presence of the President (Canon Brigstock), and several of the Directors of the School, Dr. Bennett, and other gentlemen. The head-master, Mr. H. S. Bridges, A.M., and the assistant master, Mr. McLean, were highly complimented on the good order, discipline, and progress of the school. Four prizes were given in each department for proficiency in Greek, Latin, Geometry, and other branches. The system of granting prizes and merit cards for general school standing, recommended by the Board of Education as preferable to rewards for success in particular branches of study, has not been generally adopted in the schools of St. John.

In the Girls' High School, Victoria Buildings, St. John, a very pleasing private entertainment was given by the young ladies, under the supervision of the esteemed Principal, Mrs. Carr. The programme embraced recitations, readings, vocal music, a chafarde, etc., at the conclusion of which a few kindly remarks were made by some of the Trustees and others, who had in some way gained admission. Besides these there were present by special permission a dozen of the best girls from each of the other departments.

The Executive Committee of the Educational Institute (Provincial) was summoned to meet at Fredericton on the 2nd January, for the purpose of making arrangements for the next meeting of the Institute. We shall be in a position next month to announce the results of their deliberations. As at present constituted, the Committee consists of the following gentlemen, viz.: Dr. Rand, Chief Superintendent of Education; President Jack and Professors Harrison, Bailey and Fletcher, of the University of N.B.; Principal Crockett, of the Provincial Normal School; Mr. G. U. Hay, of the Albert School, Carleton; Mr. J. A. Freeze, Principal of the St. Stephen High School; Mr. D. McIntyre, Superintendent of Public Schools in Portland; Mr. R. M. Raymond, principal of the Park Schools, Fredericton; Mr. G. W. Mersereau, of the Superior School, Bathurst; and Mr. John Lawson, of the Superior School, Campbellton; with Mr. H. C. Creed, of the Normal School Faculty, as Secretary-Treasurer.

At the commencement of the present term a rearrangement of the schools in Fredericton was made, whereby each teacher of the

Primary and Advanced Schools now has charge of two grades instead of one, as heretofore. One advantage of this plan is that it removes some of the difficulties of promoting or "grading" pupils only once in the year; and another and still greater is, that it leaves every successive group of scholars under the hand of the same teacher for a period of two years, which must prove more satisfactory than a yearly change. This plan has been pursued in the Model Schools for many years past.

Mr. Geo. Smith, A. B., Principal of the Elgin Grammar School, and President of the Albert County Teachers' Institute, has been appointed Inspector of Schools for the Third District (Westmoreland and Albert), in place of Mr. H. Powell, A. B., resigned.

Robert Marshall, Esq., M.P.P. for the City of St. John, was sworn in a member of the Executive Council a few days ago, and consequently becomes a member of the Board of Education.

There have been several changes in the Boards of School Trustees of St. John, Fredericton, St. Stephen and other towns, which will be noticed in a future number.

His Excellency the Governor-General has been pleased to offer a number of prize medals for competition in the Provincial University and some of the principal schools in the Province, as follows: In the University of N. B., a gold medal and a silver medal; in the Provincial Normal School, two silver medals; in the Provincial Model Schools, a bronze medal; in the Girls' High School, St. John, a silver medal; in the Boys' High (Grammar) School, St. John, a bronze medal; in the Collegiate School, Fredericton, a bronze medal; in the Newcastle High School, a bronze medal. The conditions of award in each school will be announced hereafter, and medals will no doubt be given to other schools, in addition to those named.

Teachers and Trustees will hereafter receive their drafts for the payment of the Provincial allowance and the County fund direct from the Education Office at Fredericton, not through the Inspectors as formerly. This arrangement went into operation in the issue of the drafts for the term ended 30th November last.

QUEBEC.

At the last meeting of the Protestant Committee of the Council of Public Instruction there were present the Right Reverend Bishop Bond, Principal Dawson, LL.D. and F.R.S., R. W. Heneker, Esq., Dr. Cook, the Venerable Archdeacon Leach, LL.D., the Hon. W. W. Lynch, and the Hon. G. Ouimet, Superintendent of Public Instruction. In the absence of the Lord Bishop of Quebec, Mr. Heneker read the report of the sub-committee appointed to consider the reports of Inspectors of Academies and Model Schools. They suggested that the committee should take the schools in order and decide their grants with reference in each case to the Inspectors' reports. They further recommended that, in order to exhibit a clear statement of the kind, quality and degree of instruction given in each school, a digested method of examination should be prepared and sanctioned by the committee for future use, and they thought that this would be facilitated by the adoption of a uniform set of text-books. The committee agreed to receive the report and adopted the recommendation, that in the future reports by Inspectors of Academies and Model Schools the educational matter should be kept distinct from school appliances, &c. The committee further agreed to re-appoint the sub-committee, with the addition of Dr. Leach's name, and to refer thereto the consideration of the forms for exhibiting the state of instruction in each class of the schools inspected, and the adoption of a uniform set of text-books, said sub-committee to meet in Montreal during the Christmas holidays. In regard to medical matriculation and entrance examination on the study of the legal, notarial and other professions, Dr. Dawson stated that a Bill had been introduced during the late session of the Provincial Parliament, but that it had failed to pass. The sub-committee on this subject was re-appointed. The Secretary was instructed to call the notice of colleges or academies to the provisions of the Dominion Government in aid of military drill in such institutions. The Hon. Mr. Lynch stated that he had brought under the notice of the late Government the arrears of Marriage License fees now in the hands of the Dominion Government, but that nothing had as yet been done in regard to this matter. It was resolved to re-appoint the sub-committee on this subject, omitting the name of the Hon. W. W. Lynch, and adding that of R. W. Heneker, Esq. On the motion of R. W. Heneker, Esq., seconded by the Venerable Archdeacon Leach, it was unanimously resolved to adopt the following resolutions, which had been passed by the Catholic committee: "The

committee resolve unanimously that the following requirements are, in the public interest, of a nature so urgent that they ought to be pressed upon the attention of the Government, with a view to immediate action. 1st. The continuance of the salaries of the school inspectors the same as in the year 1877-78. 2nd. Granting to the Superintendent the customary supplies for prize-books. 3rd. Granting to the Normal Schools the customary subsidy of \$46,000." On the motion of R. W. Heneker, Esq., seconded by the Ven. Archdeacon Leach, it was unanimously resolved: "That a sub-committee be appointed to confer with a sub-committee of the Roman Catholic Committee on the subject of inspection, as well as on any other matters bearing on the general question of education, and that the Hon. the Superintendent be requested to act on both of these sub-committees as convener, said sub-committee to consist of R. W. Heneker, Esq., Dr. Church, the Lord Bishop of Quebec, Dr. Cook and Dr. Dawson. To this sub-committee were also referred several sets of school books from Messrs. W. J. Gage & Co., Publishers, Toronto, On the recommendation of Mr. Inspector Emberson it was agreed to offer a grant from the fund for superior education to the best Protestant school fulfilling the requirements of a Model School in the County of Montcalm, to be reported on by Inspector Duval. The Secretary laid before the committee the returns from Examining Boards for Teachers' Diplomas of the examinations held in May and November last, together with suggestions from Dr. Cornish, President Board of Examiners, Montreal; that linear drawing, the use of the globes and book-keeping be in future omitted from the examination; that a simple form of diploma be prepared for all grades, offering to draft such for the sanction of the committee. The Secretary was instructed to write Dr. Cornish, that, as drawing, the use of globes, and book-keeping are required by law, they cannot be omitted from the examinations, but that they may be made as simple as necessary, and to ask him to have the kindness to prepare a draft form of diplomas for all grades of teachers.

Letters were read from Inspectors Fothergill and Hubbard, regarding the deficiency of candidates for teachers' diplomas in Scripture knowledge. It appears also from the returns of Inspectors of Academies and Model Schools, that in several of such institutions there is no reading of the Holy Scriptures, nor any instruction therein. The committee agreed to refer the question of Scripture instruction to the sub-committee on inspection. Messrs. Emberson and Wier were appointed, on the same terms as previously, Inspectors of the Protestant Academies and Model Schools in the Province of Quebec, receiving grants from the Fund for Superior Education.

MANITOBA.

A quarterly meeting of the Council of the University of Manitoba was held in the Education Offices on Monday, December 4th, the following officers being present, viz:

The Bishop of Rupert's Land, Chancellor; His Grace the Archbishop of St. Boniface, Archdeacon Cowley, Revs. J. Black, D.D., J. Robertson, Canon Grisdale, Canon O'Meara, S. P. Matheson, R. Young, Professor Bryce, Professor Hart, W. C. Pinkham, and Fathers Lavoie, Dugas, Forget and Cherrier, Judge Dubuc and A. Cowan, M.D.

Amongst other business, the Council appointed the following gentlemen to constitute the Board of Examiners for the ensuing year, viz:—Classics—Rev. A. Forget, Canon O'Meara, and Prof. Hart. Mathematics—The Chancellor, Prof. Clouthier, and Rev. A. Campbell. Natural Sciences—Prof. Bryce, Rev. Mr. Cherrier, and Mr. Heber Archibald. Mental Philosophy—Revs. Dr. Lavoie, and J. Robertson and Mr. Bain. Modern Languages—Rev. O. Fortin, Prof. Hughes, and Mr. Killam. Rev. J. Robertson and Mr. E. W. Jarvis were unanimously re-elected Registrars of the University for the ensuing year.

The Board of Education held its quarterly meeting on the same day. The proceedings were of a formal character.

The annual distribution of prizes to the successful students of Manitoba College took place in Knox College, Dec. 10th.

The Professors occupied chairs upon the platform. They were supported on either side by Rev. Jas. Robertson, Rev. E. Morrow, M.A., Rev. D. McRae, Rev. W. Ewing, B.A., Consul Taylor, Hon. S. C. Biggs, B.A., A. M. Sutherland, B.A., M.P.P., and W. B. Black, B.A., the last two being alumni of the college.

Notwithstanding the very disagreeable state of the weather a large number of citizens and friends of the students were present. The following students have had the places assigned them in the

prize list as the result of examinations passed in the University of Manitoba, and at the close of each term of the session:

Medals—Form III—Governor-General's: Silver Medal, J. B. Polworth. Form II—Argyle Bronze Medal, W. McK. Omand.
Prizes—Form II—Class Prize, R. R. Sutherland. Form I—Class Prize, G. M. Atkinson and D. Anderson (equal); honorable mention—J. Mulvey and H. Ogletree.

Bursaries—Entrance Examination—1st and 2nd Bursaries, W. Scott and Donald H. McVicar (equal); 3rd, T. H. Scott; 4th, A. E. Hurstall. Donald H. McVicar is a pure Cree Indian.

QUERIES.

J. E. H.—Any one may write for a non-professional First Class Certificate at any time or any age. He will not, of course, receive his certificate until he has fulfilled the requirements for a professional certificate, including experience, and attendance at the Normal and Model Schools. The regulations are contained in the Compendium of School Law, to be found in every school section in the hands of the Trustees.

G. V.—The teacher does not lose the amount if the order for the Government Grant is mislaid. The Inspector may give another order, which will cancel the first.

M. N.—The metric system is not yet used in Canada.

Both books named are authorized in the subject of Book-keeping. Any edition of Roscoe will do.

TEACHER.—(a) The Normal School sessions in Ontario last three months for second-class teachers.

(b) The travelling expenses of second-class candidates are paid by the Education Department.

(c) Students must purchase their own books for use in the Normal Schools, but they are supplied to them at one-half the retail price.

The Literature for First Class Certificate, Grade C in 1880, will be

Julius Cesar—*Shakespeare*.
An Elegy in a Country Churchyard—*Gray*.
The Traveller—*Goldsmith*.
The Spectator—Papers 106, 108, 112, 115, 117, 121, 122, 123, 125, 126, 131, 209, 323, 335, 517—*Addison*.
Johnson's Life of Addison.
Macaulay's Life of Johnson.

No particular editions of these texts are prescribed, but the following good ones are mentioned in order to aid candidates:

The edition of Julius Cesar, in the Clarendon Press series.
Morley's Spectator.
Matthew Arnold's Johnson's Chief Lives of the Poets. This contains both Johnson's Life of Addison and Macaulay's Life of Johnson.

The English authors to be read for First Class Certificates, Grade A and B, in 1880, are

CHAUCER—The Prologue to the Canterbury Tales.
The Nonne Prestre's Tale.
SHAKESPEARE—Romeo and Juliet.
MILTON—Areopagitica.
POPE—The Essay on Man.

MATTHEW ARNOLD—The Preface to Johnson's Chief Lives of the Poets.
N.B.—Candidates who take other departments will be required to show by passing an examination in Romeo and Juliet that they have read the play carefully, and that they are in the habit of writing the English Language correctly.

No particular editions of these texts are prescribed, but the following good ones are mentioned in order to assist candidates:

Morris's Edition of Chaucer's Prologue to the Canterbury Tales and the Nonne Prestre's Tale in the Clarendon Press Series.
Hunter's Romeo and Juliet.
Arber's Edition of the Areopagitica.
The Edition of the Essay on Man, in the Clarendon Press Series.
Matthew Arnold's Johnson's Chief Lives of the Poets.

W. D. M., *Summerside, P.E.I.*—(a) He can write at once in Ontario for a certificate of a corresponding grade to the highest he may hold from any Normal School in the British Dominions.
(b) Nearly \$800.

T. W. C. B., *Allenwood*.—Consult Compendium of School Law, page 236. Your Trustees have it.

Readings and Recitations.

* * ERRATA IN DECEMBER NUMBER.—In Latin Hymn, p. 283, line 2, for *O mecum habitato*, read *Tu mecum habitata*: line 5, for *properat* read *properant*.

OUR FIRST INSPECTOR.

AN OFF-HAND "COMPOSITION," BY A PUPIL OF MOUNT FOREST HIGH SCHOOL.

Ah! well we knew that, on some wintry morn,
When outside all was dreary, bleak, and chill,
There would invade our school the stalwart form
Of one who'd through each bosom send a thrill.

Was it a thrill of gladness, hope, or joy,
Or did we shake with a convulsive dread?
I think, though I can't tell the reason why,
We "trembled slightly" when we heard that tread.

But memory came with all its force and power,
And bore our thoughts back to a summer day
A year ago, when at the self-same hour
The self-same person came the self-same way.

Our school was then but five or six months old,
Yet here he found an "Intermediate Class"
"Intent on high designs," with names enrolled,
Just on the eve of marching up to pass.

We did march up, a joyous happy crowd;
No thought of failure in our wildest dream:
But back we came with lamentations loud,
Alas! we found "things are not what they seem."

He told us calmly when he called that time,
Fierce was the fight, for us so young and frail;
Right well he knew 'twas he who charged the guns
That pierced our ranks, and caused each heart to quail.

But failure taught us what we need to know,
And showed us each wherein our weakness lay;
We strengthened this, and tried again to show
Our neighbors we were quite as "smart" as they.

Winter and summer since that time have gone
When last we gazed upon his welcome face;
When now he calls, he'll find us further on—
I hope, in all, improvement he may trace.

Our force is larger, and commanded by
A gallant staff of faithful men and true;
In all the schools which claim the title High,
I doubt if he would find as fine a crew.

—MARGARET NAISMAITH

Mount Forest, Nov. 22, 1879.

A LITTLE BOY'S TROUBLES

A RECITATION.

I thought when I'd learned my letters,
That all my troubles were done;
But I find myself much mistaken—
They have only just begun.
Learning to read was awful,
But nothing like learning to write;
I'd be sorry to have you tell it,
But my copy-book is a sight

The ink gets over my fingers:
The pen cuts all sorts of shins,
And won't do at all as I bid it;
The letters won't stay on the lines,
But go up and down and all over
As though they were dancing a jig—
They are there in all shapes and sizes,
Medium, little and big.

The tails of the g's are so contrary,
The handles get on the wrong side
Of the d's and the k's and the h's,
Though I've certainly tried and tried
To make them just right; it is dreadful,
I really don't know what to do,
I'm getting almost distracted—
My teacher says she is too.

There'd be some comfort in learning
 If one could get through; instead
 Of that, there are books awaiting,
 Quite enough to craze my head.
 There's the multiplication table,
 And grammar, and—oh, dear me,
 There's no good place for stopping.
 When one has begun, I see.

My teacher says, little by little
 To the mountain tops we climb,
 It isn't all done in a minute,
 But only one step at a time.
 She says that all the scholars,
 All the wise and learned men,
 Had each to begin as I do;
 If that's so—where's my pen?

THANKSGIVING HYMN.

BY W. P. DOLE, ESQ., A.B., INSPECTOR OF SCHOOLS FOR THE 5TH DISTRICT,
 NEW BRUNSWICK.

THE DECET HYMNUS—"Thou crownest the year with Thy goodness, and
 Thy clouds drop fatness."

Lord of the harvest! from whose hand,
 In bounty royally outpoured,
 Plenty hath flowed o'er all the land.
 And all our garner's full are stored,
 To Thee we raise
 Our song of praise,
 To thee in Heaven and Earth adored.

Thy care preserved the precious seed,
 Nursed tender shoot and bud and blade,
 'Till in the time by Thee decreed,
 Summer her glories bright displayed:
 And Nature's voice
 Bade Man rejoice
 In Thee who Heaven and Earth hast made.

The early and the latter rain
 Gladdened green fields and teeming ground;
 And mellow fruits and golden grain
 Sweet ripeness in Thy sunshine found:
 By genial showers,
 By glowing hours,
 The year is with Thy goodness crowned.

Nor for Earth's kindly fruits alone
 In grateful hymns Thy praise we tell,
 We who, kept as Thy very own,
 From war and strife, from sickness fell
 And pestilence,
 By Thy defence,
 In Freedom, Peace and Safety dwell.

Lord of our life! whose open hand
 Good on all living things doth pour,
 For all rich blessings on our land,
 For all the Harvest's happy store,
 Our hearts shall be
 Lift up to Thee,
 To Thee whom Heaven and Earth adore!
 St John, N. B., Nov. 5, 1879.

Official Department.

NEW BRUNSWICK.

The Board of Education at a recent meeting adopted a series of new regulations relating to school inspection and inspectors, the most important of which are here given.

In pursuance of and in addition to the specific duties assigned by law and by any existing regulation, each Inspector is to govern himself by the following regulations:

A School or Department ineligible for classification.—(a) The Inspector shall assure himself of the validity and class of the Teacher's License, the regularity of the Teacher's Agreement, and that the Register is carefully and properly kept. (b) He shall note the plan pursued in the classification of the pupils, the management of the School or Department, and

especially the arrangement and allotments of the Time-Table, and witness the teaching of such classes, from the youngest to the oldest, as he may desire. (c) He shall offer such suggestions and criticisms to the teacher as he may consider best calculated to give effect to the methods of teaching and management inculcated at the Provincial Normal School, and enter his name, with the date and duration of his visit, in the Register. (d) He shall, except in cities and incorporated towns, examine the Records of the Board of Trustees to see that they are properly kept, and entered in a Minute Book. (e) He shall see that the supply of corporate seals is sufficient, and that they are properly used, and that blank forms of Assessment, Registrations and Returns are supplied. (f) He shall call the attention of the Trustees to the Merit Book authorized for schools, and to the provisions of the Law and the Regulations of the Board respecting School Prizes. (g) He shall specially note the condition of the School-house and premises, and see that the School is in all respects maintained and controlled in conformity with the provisions of the Law and the Regulations of the Board of Education.

A School or Department eligible for classification.—If at the date of the annual visitation the Teacher has been in charge of the School or Department for more than one term (this condition not to be required till Nov. 1, 1880), and presents for examination at least the average number of pupils in attendance for the term to date, where such average is 60 per cent. and upwards of the enrolled number, and at least 60 per cent. of the enrolled number where the average attendance is below 60 per cent. of the enrolment, the Inspector shall, in addition to the prescriptions above, proceed to examine the School or Department for classification, as follows:—

(a) In ungraded schools the pupils shall be presented in groups, and in graded schools in classes, each group or class professing one Standard of the Course of Instruction, or portions of two consecutive Standards, embracing one year's school work (or, in the case of pupils in the first Standard who have not been a year at school, and of grades admitted to a department less than a year previous to the inspection, a definite portion of the Standard). A pupil shall not be presented in more than one group or class, nor shall a pupil who has successfully passed the general tests applied to a given group or class be presented in the same group or class at any subsequent inspection. Departments of High Schools are included herein, and of Grammar Schools, and those classes in the latter which are pursuing a course in advance of Standard VIII., and all classes in the former, shall, until the Course of Instruction for High Schools is prescribed by the Board of Education, profess the course in operation in the department for such classes.

(b) An intelligent acquaintance with the subjects of the Standard (or definite portion of Standards as the case may be) shall be understood to be professed by each group or class; and such intelligent acquaintance shall include also *manual skill, neatness, and taste* in all slate and black-board work, writing, drawing and sewing (when taught); and the ability to express thought and sentiment in the subjects of reading and singing.

(c) The Inspector shall require such exercises of the several groups or classes as he deems necessary to determine with sufficient accuracy the quality of the instruction given in the school or department. He shall have a care that the general tests applied by him to the different groups or classes are such as, taken together, will discover the quality of the instruction given in every subject of the Course, within the Standards and portions of Standards professed. Only those pupils performing the exercises prescribed by the Inspector in a manner which satisfies him that they possess the intelligent acquaintance professed [as specified in (b)], shall be "passed" by the Inspector.

(d) In assigning the Rank of the school or department, the Inspector shall carefully and strictly apply the following principles:—

First Rank: When not less than 75 per cent. of all the pupils presented have been passed, and not less than 60 per cent. of each group or class, the school or department shall be classed in the first rank.

Second Rank: When not less than 60 per cent. of all the pupils presented have been passed, and not less than 50 per cent. of each group or class, the school or department shall be classed in the second rank.

Third Rank: When not less than 50 per cent. of all the pupils presented have been passed, and not less than 40 per cent. of each group or class, the school or department shall be classed in the third rank.

Failed to Classify: When any school or department fails to be classed in one of the above Ranks, it shall be reported as having failed to classify.

(e) The additional grant accruing to teachers whose school or departments receive classification shall be drawn by the Chief Superintendent at the close of the school year, and paid in the month of December.

Superior Allowance.—(a) No pupils shall be admitted from a department of a Grammar School to examination for the superior allowance. (b) If a school or department which is eligible for classification fails to classify, the Inspector shall not, during the school year, examine any of its pupils for the superior allowance. (c) The school accommodation and appliances required by the Regulations of the Board of Education, must, as provided by the school or department, be sufficient, in the judg-

ment of the Inspector, otherwise he shall not entertain the application for inspection for this allowance. (d) Each group or class presented under Standards VI. or VIII., as the case may be, shall be examined by the Inspector upon all the requirements of the Standard. (e) Any pupil who was a member of the school or department during the term immediately preceding that in which the annual visitation is made, may, even though not belonging to the school or department at the time, be presented in the group or class for this examination, but he shall not be reckoned as a member of the school or department for any other purpose whatsoever. (f) The superior allowance shall be apportioned by the Chief Superintendent to teachers and Boards of Trustees at the close of the school-year, and be paid in the month of December.

Written Report to the Trustees.—In addition to any oral communications, the Inspector shall at the time of the inspection of any school or department (whether eligible or ineligible for classification), or within ten days thereafter, transmit to the Secretary of the Board of School Trustees, for the information of the Board of Trustees, a statement of the general results of the inspection, and he shall at the same time (or in the case of cities and towns, at the completion of his annual visitation to all the schools) offer any suggestions, in harmony with the Law and Regulations of the Board of Education, which he deems necessary respecting the organization and management of the school or department, or improvements required in respect of the school accommodation, appliances and premises, which communications shall be preserved by the Trustees; and if it shall appear at the next annual visitation that the Inspector's suggestions have been disregarded, he shall report the fact to the Chief Superintendent, with such recommendations as he may deem proper.

Public Addresses.—In addition to any special meetings that may be required from time to time, the Inspector shall address the people as frequently as practicable during his tour of annual visitation (appointments being notified in advance, and the expenses of house accommodation for the same being defrayed by the people of the locality), urging the importance of sustaining efficient and permanent schools, pointing out the provisions of the law and the steps to be taken to secure its fullest advantages, the requirements respecting school accommodation and appliances, the means necessary to ensure the regular support and proper conduct of schools, the necessity of the regular attendance of pupils at school, the importance of the Trusteeship, the value of well-qualified teachers, and the obligations resting upon every community to co-operate with Trustees and Teachers in discharging the duties assigned to them by our school system.

Institutes.—As a member of the Committee of Management of the County Teachers' Institutes convening within his Inspectoral District, it shall be the duty of the Inspector to assist the Committee, to attend the meetings of each Institute, and to promote the attainment in the highest degree of its objects as specified by regulation. It shall also be his duty to attend the annual sessions of the Educational Institute whenever practicable.

REVIEWS.

LATIN ACCIDENCE. By G. L. Bennett, M.A. Rivingtons. This is the Latin Accidence contained in Mr. Bennett's excellent "First Latin-Writer," a notice of which was given some time ago. In this little work of 52 pages the essentials of Latin accidence are given; it is just the thing to put into the hands of pupils who have not time to spend over the piecemeal work of the "Principia Latina" and similar books. In our opinion the "Synthetic" method is being overdone. A boy spends from six months to a year in getting through a work in which the essentials of Grammar are doled out to him in insignificant scraps, and then the teacher finds that his pupil has no connected knowledge of the most important points of Latin Grammar. We believe that with the "Latin Accidence," and such a book as Bennett's easy Latin stories, more satisfactory results could be produced in half the time that is now spent in getting over the dribblings of such unsatisfactory books as the "Principia."

CÆSAR DE BELLO GALICO. Book I. By J. H. Merryweather M.A., and C. C. Tancock, M.A., with Introduction, Maps, Grammatical and Historical Notes, &c. Rivingtons: London, Oxford and Cambridge. The Introduction gives an account of "Gaul and its Relations with Rome," and a "Life of Cæsar till B.C. 58." The Grammatical Notes occupy 63 pages, but they are not too full—they are just what they ought to be in a book for young students. The geographical and biographical indexes are all that can be desired. This would be a capital book to use in connection with Bennett's "Latin Accidence," noticed above.

HOMER'S ILLIAD. Books I. and II. By Arthur Sedgwick, M.A. (of

Rugby). Rivingtons. We fully agree with the remark of the editor of this work, that the great obstacle to the beginner in reading Homer is not the meaning but the accidence, the forms of the words are so difficult from those which he has learned in his grammar that he is likely at first starting to be in despair. The editor's design has been to meet this difficulty, and we think he has successfully accomplished his work. He has given in the notes a brief but clear statement of the Epic forms as they arise, and in the "Notes on Language" he has given a well-arranged *resumé* of the peculiarities of Homeric Syntax and Accidence. The notes are very complete, and contain so much information about Homeric forms that the mere dictionary work of the student will be greatly lightened. We can confidently recommend this book as one of the best, if not the very best, we have seen.

HYDROSTATICS AND PNEUMATICS By Philip Magnus, B.A., B.Sc. **THERMODYNAMICS** By Richard Wormell, D.Sc., M.A. These are parts of the series of "London's Science Class Books," now in course of publication by Longmans, Green & Co. The treatment of the subjects is elementary, yet quite scientific, the fundamental parts are stated and discussed with the fulness needed to place their scientific significance in a clear light. The young teacher and the private student will find these books excellent introductions to the sciences of which they treat. They are published at the moderate price of 1s. 6d. each.

HARPER'S LATIN DICTIONARY. Harper Bros., New York. This is a revision of Freund's great dictionary. It is edited by E. A. Andrews, LL.D. Revised, enlarged, and in great part rewritten by Charlton T. Lewis, Ph.D., and Charles Short, LL.D., Professor of Latin in Columbia College, N.Y. Among the peculiar features which distinguish the present work may be noted the comparative breadth of its scope and the comprehensiveness of its details. It forms a more complete guide to the entire literature than any previous work. In regard to the Latin orthography, it is the only work which embodies the results of recent investigations by philologists like Ritschel, Corssen, Brambach, and others and which are accepted as authorities in the latest and best editions of the Latin classics.

READINGS FROM ENGLISH HISTORY. Harper Bros., N.Y. These "Readings" are selected from foreign and American writers, and edited by John Richard Green, M.A., LL.D. Three parts in one vol. They embrace incidents from Hengist to Victoria, and contain Mr. Freeman's account of the Battle of Hastings, Kingsley's well-known defence of the poetry of Puritanism, Macaulay's sketch of the landing of William III., and other extracts of a similar character.

STUDIES OF THE GREEK POETS. Harper Bros., N.Y. These "Studies" are in two vols., and are by John A. Symonds. They form an admirable summary of Greek poetical literature, and are written in an easy and interesting style.

A TRUE REPUBLIC; by Albert Stickney. Harper Bros., N.Y. This book gives a summary of the English and American systems of government. It points out for remedy great defects in the latter.

WHAT MR. DARWIN SAW in his Voyage Round the World in the Ship "Beagle." Harper Bros., N.Y. Darwin's narrative of his voyage around the world is the source from which the editor has compiled an admirable book for youthful readers, at once diverting and instructive. It is adorned with one hundred illustrations, besides maps and charts.

TYROL AND THE SKIRT OF THE ALPS. Harper Bros., N.Y. In this book, Geo. E. Waring, jr., has given the public an entirely fresh and original volume of travel through the charming country of the Tyrol. His narrative is sprightly and entertaining; his observations are shrewd and accurate.

BENNETT'S LATIN ACCIDENCE. Rivingtons, **BENNETT'S FIRST LATIN EXERCISE BOOK:** Rivingtons. These two books, when bound together, constitute **BENNETT'S FIRST LATIN WRITER.** The **LATIN ACCIDENCE** calls for no special remark, but the **FIRST LATIN EXERCISE BOOK** appears to contain a well-arranged course of exercises introductory to Latin prose composition, which might advantageously be used in our High Schools.