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THE

JOURNAL OF EDUCATION.

FOR THE PROVINCE OF NOVA SCOTIA.

EDUCATIONAL GRANTS FOR 1867.

THE fact that in the Estimates passed by the Legislature at its present session, Education is set down for a smaller sum than was expended last year, has given rise to an impression that the schools have been suddenly deprived of a large proportion of the legislative aid which the people were led to expect. In answer to several enquiries on the subject we beg to state that there exist no grounds for any fears in relation to the matter. The amounts payable to the several classes of teachers were fixed by law in the legislative session of 1866. The scale then adopted has not since been touched. It will be found in the 18th section of the "Law concerning Public Schools." Every teacher will receive to the full the amount to which he or she is entitled under that section. The other grants in connexion with public schools remain as specified in the published law, and will be paid as they become due. It will therefore be plain that any sudden diminution of the aid for schools is impossible. The legislature has given to the people the power to determine how much shall be drawn annually hereafter from the Treasury for the support of schools. If the schools are few and taught by inferior teachers the amount drawn will be small; if many, and taught by well-qualified teachers, the amount drawn will be large. The Province has thus adopted the wise principle of paying each Section according to the amount and quality of the teaching work performed in it during each term.

A word of explanation in reference to the estimated expenditure. It has hitherto been customary to estimate the expenditure for education a year in advance. This system worked very well while a fixed sum was granted to each County to be subdivided among such teachers, many or few, as might chance to be engaged in it during any term. But under the amended law it is no longer possible to estimate so far in the future with anything like the requisite accuracy, since it is impossible to know how many schools will be in operation for a term which is yet a year in the future. At the request of the Superintendent, the Hon. Financial Secretary confined the last Estimate for Education strictly to the financial year, which ends on the 30th of September. The amounts payable to teachers in November next are therefore not included. This explains the smallness of the sum voted.

SALARIES AND CLASSIFICATION OF TEACHERS.

THE Report of the Superintendent of Education for the school year 1866 has been printed, and a copy for each Commissioner, and for each board of trustees, has been forwarded to the several Inspectors. Some facts showing the great progress which has been made in the education of the province, will be found under "Educational Intelligence." We make the following extract from the report:

The total number of teachers employed in the winter was 929, and in the summer 1,190, showing an increase for the respective terms of 223 and 237 over those of last year. The amount expended in the Province for teachers' salaries during the school year was \$235,825.67, an increase of \$45,730.28 over the previous year. The sources whence these salaries were derived, and the amount from each source,

were as follows.—Province, \$95,339.27; Counties, \$55,258.64; Sections, \$85,227.76. Applying to the sum of these amounts the scale of proportions for salaries recommended by the Council of Public Instruction, the approximate average of the salaries of the several classes of teachers for the whole school year was at the following rates: Male Teachers, Class 1st, \$392; Class 2d, \$294, Class 3d, \$196. Female Teachers, Class 1st, \$291; Class 2d, \$196; Class 3d, \$147: average salaries of teachers for the year, without respect to class, \$258.53. This does not include the salaries of the Head Masters of County Academies. In 1865, the average was \$239.67; and in 1864, \$146.85. The increase in the salaries of teachers is one of the most gratifying and significant features in connection with the recent educational reform. We may now reasonably expect that much talent of a good order will seek employment in the work of teaching, and that an increasing number of those who engage in this, one of the noblest of callings, will do so for life. It is abundantly evident that the people, with the assistance of the provincial and county grants, are not unwilling to provide a fair remuneration for teachers. Any deficiency in the number of teachers will be found to be but temporary and local, as the supply hereafter will chiefly depend upon the demand at remunerative rates.

An adequate and expansive mode of support having now been established by law, the examination and classification of teachers becomes one of the most important matters in connection with the system. "As is the teacher, so is the school," is, with obvious limitations, a sound educational maxim; and everything that contributes to the elevation and progress of teachers as a class, contributes also to the progress and efficiency of the schools. The object of the examination and classification of teachers is to ensure to each community and to the Province that the school training of the youth of the country is not assumed by incompetent or unworthy persons, and the children of the land thus defrauded of that preparation for the coming duties of citizenship which the law declares to be their right. The existing enactment provides thirty-four local committees of District examiners, and a committee of Provincial examiners for the Normal School. The great majority of these committees have discharged their important duties with diligence and care, and their appointment has proved to be one of the most beneficial provisions of the law. In consequence, however, of the adoption by the Legislature of the present admirable arrangement for the payment of fixed provincial grants to teachers, a different provision for their examination and classification seems to be required. Every teacher of the same class is now entitled, and justly so, to an equal grant from the public treasury for his services. In order, therefore, that justice be guaranteed to the Province, and to the teachers in different Districts and Counties, a uniform examination and classification are indispensable. This can not be secured under existing arrangements, since thirty-four different committees must of necessity adopt thirty-four different scales of classification, notwithstanding that they have a uniform outline of subjects before them. Many of our ablest examiners have repeatedly pointed out to me this defect, and many committees in consequence of this want of uniformity have been compelled, in a conscientious discharge of their duty, to require the re-examination of all teachers from other Districts. In fact, this is the only safe course for them to adopt in order to maintain the character of their schools, and to do justice to all their teachers. But while this course is necessary under present arrangements, it excludes the very flower of the teaching profession from the enjoyment of those immunities to which their attainments and ability entitle them, and subjects them to continual and in their case needless re-examinations. Every teacher of established character and ability should have the range of the whole Province before him in choosing his field of labour, and every board of trustees desiring to procure the services of such a teacher should have a like range

from which to make their selection. Under the present arrangement the validity of each license is confined within the limits of the District in which it is obtained, so that by stepping over a line, and in the majority of cases without leaving the county, a teacher, though it may be, many times examined, and as often licensed, finds himself without the requisite authority to conduct a public school. If he should, under such conditions, accept the charge of a school, he does so entirely on risk, and after months of diligent and arduous labour, he may find himself debarred from all participation in the public funds. Nor is this only a possible case. At the last semi-annual distribution in one District, three of the fourteen teachers employed during the term, were necessarily cut off from public aid because, though regularly certificated, their licenses had been obtained in another District. It is obvious that such an arrangement cannot be regarded as satisfactory.

I beg, therefore, to suggest, for the consideration of the Legislature, whether it would not be wise to empower the Council of Public Instruction, after the present term, to prescribe the times and places for the examination of teachers, and to secure their uniform classification by means of a Provincial Board of Examiners. I am of opinion that this would be the most efficient mode of obviating the difficulties arising under the present arrangement. The principal details of the plan suggested would be as follows:—

1. That the Provincial Board of Examiners consist of four members, resident at or near Halifax. For the sake of efficiency and dispatch, the various branches of scholarship should be apportioned between three members of the Board, while professional subjects, such as school organization, classification, methods of instruction, and the like, should be assigned to the fourth.

2. That a uniform schedule of examination-questions on each syllabus be prepared under the supervision and with the approval of the Council, printed, and forwarded under seal to the several Inspectors. This course has been repeatedly suggested to me by many of the present Examiners; and as each syllabus of examination is already prescribed by the Council, it seems well to require their approval of the questions founded thereon.

3. That each Inspector, or, if necessary, a deputy, preside at each examination in his county. He would be required to enter in a blank form the name, age, sex, experience, character, &c., of each applicant, and to test and record the attainments of each with respect to reading and other oral work. The printed questions would then be submitted to the candidates, and immediately on the close of the examination all the papers would be transmitted to the Board at Halifax. Each member of the Board being entrusted with the examination of papers on specific subjects, the value of each applicant's work would be ascertained with expedition, and a corresponding certificate transmitted to the Inspector.

It appears to me that this plan would be found in practice to combine in a very high degree the advantages inherent in both the local and general modes, with few or none of the disadvantages that necessarily attach to the exclusive adoption of either. Its operation would inspire a mutual respect among teachers for each other's claim to membership in a common fraternity, an *esprit de corps* already manifesting itself among the teachers in some parts of the Province, would be cherished and rapidly developed, a degree of permanence would be given to teaching, and a satisfactory guarantee would be had that the uniformity of qualification implied by a uniform scale of Provincial grants, has an actual existence in the practical operation of the system.

The granting of 3d class permissive licenses of local and temporary value could be as readily effected as at present, in order to meet any exigency which might temporarily arise in a few of the more backward Districts of the Province. The examination of the students attending the Provincial Normal School could also be most efficiently conducted in connection with the Board of Examiners.

Teachers' licenses would, of course be subject to suspension or cancellation by the Boards of Commissioners, in the same manner and for the same causes as at present.

The following is the conclusion of the Report:—

It is not necessary to say more in order to show that greater activity has been manifested in the concerns of education than in any former year. The work of Education however has but just begun. The Legislature has acknowledged the right of every inhabitant of Nova Scotia to the price-

less blessing of a free education; created a permanent and expansive mode of support; and, as never before, sought by an extensive and constant supervision to establish schools within the reach of every child, and to render these schools efficient in the highest possible degree. The hearty response, as shown by the facts given in this report, which the great body of the people have accorded to the measures taken for the introduction of a system of public schools, has placed this great undertaking above the range of doubt or experiment. It remains to awaken those among the people who have not yet become alive to the claims of universal education; to encourage and stimulate the various sections to procure school accommodation where none at present exists, and to perfect, where necessary, that which has already been procured; and by well directed means to call into the teaching profession such a supply and quality of talent as is demanded in order that the system shall yield those noble and lasting fruits which its founders had in view, and which by its adaptedness to the circumstances of our people it is so admirably fitted to confer. All these objects may, by the united and persevering efforts of the friends of education, be easily attained; and it is only required that, by such judicious improvements as experience may suggest, legislation may keep pace with the growth of an advanced educational sentiment throughout the Province.

SCHOOL LEGISLATION, SESSION OF 1867.

THE following Act to amend the general law of the Province concerning public schools, has been passed during the present session of parliament. It will be seen that the amendments chiefly refer to Halifax city. Among the provisions referring to the whole province, that which establishes a Provincial Board of Examiners is of great importance; and will doubtless prove highly beneficial to teachers and to the cause of education in all its relations. Under its operation the business of teaching will rapidly rise to the position of a profession:—

AN ACT FURTHER TO AMEND THE ACT FOR THE BETTER ENCOURAGEMENT OF EDUCATION.

Be it enacted by the Governor, Council and Assembly, as follows:

1. The several Boards of Commissioners shall have power at the semi-annual meeting in May of each year, by vote of at least two-thirds present thereat, to unite two or more School Sections into one School Section, on a petition addressed to the Board of Commissioners by a majority of the rate-payers of each of the sections, setting forth that they have agreed among themselves, on the terms on which the existing liabilities shall be borne by the rate-payers in the several sections.

2. The union shall take effect on the day fixed by law for the next Annual School Meeting, notice of which meeting shall be issued by a County Inspector; and such meeting shall elect a board of three Trustees for the new section.

3. The Council of Public Instruction shall be empowered to appoint four qualified persons to constitute a Provincial Board of Examiners, to examine and report upon the written exercises of all candidates for license to teach in the Public Schools of this Province. The Council shall also have power to prescribe the mode in which examinations shall be conducted, to designate the times and places at which candidates shall present themselves for examination, and to make such further arrangements as may be necessary, in order to insure the uniform classification and licensing of teachers. The Examiners so appointed shall be paid at the rate of five cents for each paper submitted for their judgment, provided the said payment shall not exceed an average of seventy-five cents per candidate for licenses of the several grades, and the person appointed to conduct the examination in each county shall be paid a sum not exceeding three dollars per diem while actually engaged in the duty. The foregoing provisions shall be in lieu of those contained in the "Act for the better encouragement of Education," respecting Provincial and District Examiners.

4. In cases where the number of rate-payers in any School Section exceeds twelve, the Clerk of the Peace shall be entitled to receive twenty-five cents for affixing to the Trustees' list the amount of real and personal property, for which the rate-payers of the section are assessed in the County rate roll.

CITY OF HALIFAX.

5. Every male person of full age, having been resident in the City six months or upwards immediately previous to the levying of the assessment in any year, not being assessed to the amount of one dollar for the support of Public Schools in respect of real or personal property, shall be assessed in the sum of one dollar for the support of such schools during the year; but the City Council shall have power to exempt from the payment of such assessment any person whom they may deem unable to pay the same; and upon

the production to the presiding officer of the receipt for such payment, the holder thereof shall be entitled to vote for Mayor and Alderman at any election in the Ward wherein such party resides, for the year wherein such payment shall have been made.

6. The words "real and personal property within the County, of the residents of the section," in the third clause of the Act of 1866, to amend the Act for the better encouragement of Education, applies, and shall be understood to apply, to property lying in the City of Halifax, the owner whereof resides in Dartmouth or other School Section in the County; and the words "to be levied and collected from the inhabitants thereof," in clause 19 (4) of the said Act, applies, and shall be understood to apply, to property lying within the County, the owner whereof resides in the City; and on the payment of the required fee, the City Assessor shall furnish to the Trustees of Dartmouth, or other School Section, and the Clerk of the Peace for the County shall furnish to the City Assessor, the information necessary, in order to give effect to this provision. Any person who may have been assessed both in the City and in Dartmouth, or any of the School Sections, in respect of the same property, shall be entitled to receive back the amount paid by him either in the City or in Dartmouth, or other School Section, as the case may be, in accordance with the foregoing construction of the law.

7. The Superintendent of Education shall be empowered to pay quarterly, to the Board of Commissioners, the grants provided by law for Teachers and Assistants employed in the City.

8. The Board of Commissioners for the City shall be empowered to dispose of debentures authorized under the Act hereby amended, at current rates.

9. The Board of Commissioners for the City shall be entitled to receive a sum, in no case to exceed a thousand dollars annually, as remuneration for their services; such remuneration to be apportioned according to the promptness and regularity of the attendance of the members of the Board, and the amount of labor performed by each, as the Board may decide.

On page 20 of the "Law concerning Public Schools," now in the hands of Trustees, the following general act, passed in 1866, will be found:—

AN ACT TO AUTHORIZE THE SALE OF SCHOOL HOUSES IN CERTAIN CASES.

Be it enacted by the Governor, Council, and Assembly, as follows:

In all cases wherein a school house has been built within any section, and is owned in shares, it shall be competent for the majority in interest of the owners of shares to sell and dispose of the same to the section at any meeting duly held after ten days' notice of the object thereof, at such price as this meeting shall determine, or as may be realized at a public sale thereof duly advertised, and the proceeds of sale shall be divided among the proprietors in proportion to their shares in interest in the property.

During the present session of parliament the following amendment to this Act has been made:—

AN ACT TO AMEND THE ACT TO AUTHORIZE THE SALE OF SCHOOL HOUSES IN CERTAIN CASES.

Be it enacted by the Governor, Council and Assembly as follows:

Where the land on which any School House is situate, belongs to the same parties who own the house, the land as well as the House may be sold under the provisions of the Act hereby amended.

The Trustees of Preston Road School Section being unable to purchase a suitable site for a school-house because the owners refused to sell the land, they petitioned the Legislature to pass an act empowering them to take the land in question. The Hon. Provincial Secretary, on introducing the bill, stated that there were many reasons which seemed to justify the passage of a general law in reference to sections where the owners of land either refused to sell a school site, or were disposed to ask an exorbitant price for the same; but as such a law might, at present, be abused, he would introduce a special Act in accordance with the petition. He further stated that he believed the Legislature would always be prepared, in answer to similar petitions which might hereafter be presented, to protect the interests of the inhabitants of any section against the selfishness of individuals. Although the Act which was passed refers only to Preston Road, it may interest our readers:—

AN ACT TO PROVIDE A SITE FOR A SCHOOL HOUSE IN PRESTON ROAD SCHOOL SECTION, IN THE COUNTY OF HALIFAX.

Be it enacted by the Governor, Council, and Assembly, as follows:

1. The Trustees of the School Section in Preston Road, in the county of Halifax, may select a suitable Site for a school house, and are hereby empowered to take such quantity of land as they may require for that purpose, (not exceeding one acre), and shall prepare a plan of the same, which, after having been approved of by three Commissioners of Schools for the district, shall be recorded in the

Office of Registry of Deeds for the County of Halifax;—and the lands so taken and approved of shall be, and are hereby declared to be vested in the Trustees and their successors in office, for the purposes of this Act.

2. The value of said lands shall be appraised by any three Commissioners of Schools for the district, who shall cause notice in writing to be personally served upon the owners of such lands, their lessees, attorneys, or agents, or left at their last place of abode, informing them of the price at which such lands have been appraised, and requiring them, if not satisfied with such appraisement, to appoint an arbitrator on their behalf, to act with an arbitrator to be appointed by the said Board of Trustees, to award the compensation which such owners shall receive for the lands so appropriated.

3. Where persons are jointly interested in any such lands, the service of any such notice upon one shall be held equal to service upon all; and where persons are jointly interested as aforesaid, they may unite in the appointment of an arbitrator.

4. If within ten days after such service of notice, the proprietor or proprietors of such lands, their lessees, attorneys, or agents, shall not notify the commissioners that they have appointed an arbitrator, and furnish them with the name and residence of such arbitrator,—or if the proprietors are unknown, or cannot be found, the said commissioners shall apply to the Custos of the County of Halifax to appoint an arbitrator for such properties, and the Custos shall thereupon make such appointment.

5. The arbitrators so appointed shall be sworn in the form Schedule A, hereto annexed, to the impartial discharge of the duties assigned them, and shall award the compensation to be paid to the said proprietors. In case the arbitrators cannot agree, they may select a third arbitrator. If they fail to make such selection within the period of ten days after such disagreement, the Custos of the County of Halifax shall name the third arbitrator, who shall be sworn as aforesaid, and the award of any two of the three arbitrators made in writing shall be valid.

6. On the award being returned to the said Board of Trustees, they shall be immediately liable to pay the amount of compensation named therein, to such proprietors.

SCHEDULE A.

County of _____ and C. D.,
 of _____ in the county of _____ chosen as arbitrators
 to estimate the value of the land required for school purposes under
 the Act, situate and contained within the following description, viz.
 _____ do hereby severally and solemnly
 swear, that they will faithfully, and impartially, discharge the duties
 assigned them, in accordance with the terms of this Act.
 Sworn to at _____ this _____ day of _____ before me,
 _____ J. P.

THE IMPENDING CHANGE IN SCIENTIFIC EDUCATION IN ENGLAND.

A BOOK of some educational significance, says the *Journal of Education* for Upper Canada, has just been published in England. Its title is "Modern Culture: its true Aims and Requirements." It consists of a "Series of addresses and arguments on the claims of Scientific Education," written by Professors Whewell, Faraday, Tyndall, Huxley, and Henry, and is edited by Dr. Youmans. From notices of the work in the English newspapers we make the following extracts:—

MODERN CULTURE; ITS TRUE AIMS AND REQUIREMENTS.

This publication seems to be the latest manifesto of an impending revolution in the opinions and customs of English society with regard to the proper direction of liberal studies. The question is not whether the greatest possible encouragement should be given to the more or less united and organised band of professors and amateurs of the various branches of natural science. This is pretty well settled by this time. The annual meetings of the British Association have long been attended with flattering signs of the esteem in which their labours are held by the influential and fashionable classes. The personal claims of eminent savans are very cheerfully acknowledged. The question, therefore, now at issue, is not one directly concerning the interests of the recognised men of science. It rather concerns the part which science should take in the ordinary programme of education and subsequent self-culture for all men.

This question opens up a wide range of considerations with respect to the value of scientific pursuits for the sake of their effect on the mind itself. The commoner view of physical science looks more to its utility as dealing with matter. The interest felt by many in watching the results of scientific dis-

covery has been inseparably connected with all sorts of useful and wonderful improvements in the arts and manufactures; with the production of an enormous mass of wealth, the improvement of all our conveniences of travel and correspondence, and the manifold comforts of our daily life. But such work, highly paid and profitable to others, must be chiefly performed by the adepts of the laboratory or the engine factory, and by the scientific minds employed in making calculations or designs for their particular service. There can henceforth be no fear, we suppose, of a deficiency in the number of skilful persons able and willing to do what is needful in the business of applying science to augment the riches and commodities of mankind. That is a thing which pays, and wants no other recommendation. But what has scarcely been so well understood hitherto is the advantage of learning science as a means of mental discipline, with a view to cultivating some of the most essential faculties and habits of thought. This question touches the highest interests of humanity; it is far more important than the uses of the electric telegraph, the steam-engine, or the spinning-jenny, or the entire contents of a Paris or London Great Exhibition. It has a most serious bearing on the moral and social as well as intellectual welfare of the community, in so far as "the education of the judgment" must affect the whole creed and conduct of the individual, influencing his sentiments and behaviour in all the relations of life.

Now, it is contended by the leading advocates of the study of the natural sciences, on the new ground they have lately taken up, that this kind of knowledge, or, more properly speaking, its peculiar method of investigation, supplies an indispensable element of sound culture of the mind. They insist on having it reckoned a part of "the humanities," meaning those branches of learning—formerly meaning only Latin, with the books of logic and metaphysics written in Latin, and nothing besides—by which an accomplished man is trained and equipped to live in the modern world. They say nothing against what is pedantically called "classical" literature, and the ancient history therewith bound up. Sir John Herschel is the latest translator of Homer, though his testimony is the foremost in favour of scientific education. But they do affirm that these studies of theirs are requisite in education for the sake of an intellectual discipline, which can be imparted in no other way, and without which a young man is sent forth, at the end of his University course, blind of one eye, halting upon one leg, maimed of one hand, imperfectly prepared for manly life. They trace the evil effects of this neglect in a multitude of delusive theories and blunders of practice detrimental to our social and political state. They submit, therefore, with considerable show of reason, that natural science is quite as necessary a portion of scholarship as the grammar and prosody of the Greek and Latin languages, and that it is the due complement of mathematical studies. For it calls into exercise the powers of observing facts, of weighing probabilities, and of reasoning by induction from particular instances to general laws, which are not sufficiently developed by geometry and algebra on the one hand, or by grammar, philology, rhetoric, and formal logic on the other, in the existing scheme of University education.

It appears to us even more urgent to grant this argument a fair hearing since the two English Universities have taken such wise and liberal measures to gain a broader basis of popular support. The success of the Oxford and Cambridge local voluntary examinations all over the country, and the esteem in which the degrees and certificates are everywhere held by middle-class people, show a confident desire on the part of these to avail themselves of the same elements of education, bearing the credentials of the same authority, which are conventionally supposed to guarantee the social superiority of the privileged, wealthy and fashionable classes. In this matter, as in other affairs of domestic life and personal habit or taste, we are happily so free from the spirit of an envious democracy, that there is rather a disposition, without prejudice to the distinctions of rank, to enable all to rise to a common ground of respectability and of mutual appreciation. But, if the highest education received by the sons of the nobility and gentry at the Universities lacks an essential portion of that which should go to the complete education of the youthful mind, we hope the Universities will hasten to repair such defect before they extend their guiding and controlling influence to the education of the whole people. They have done so much in the way of reform during the last twenty or thirty years that we may expect they will see to

this. We have the example of the late Dr. Whewell, whose lecture, at the Royal Institution, "On the Influence of Scientific Discovery on Intellectual Education," is among the essays collected in this volume.

Dr. Whewell remarks, accordingly, that every great attempt ever made for the improvement of intellectual education, every advance of the standard of mental culture, recognized in any age and nation, has been the effect of some considerable scientific discovery or group of discoveries in the preceding years. In support of this proposition, he observes that the dialectic method of Socrates and Plato, or which Plato employed and ascribed to Socrates, in his ethical inquiries and his disputes with the rhetorical Sophists, came into use immediately upon the discovery of a connected body of geometrical truths, from which the Greeks of that age had learned what is the genuine aspect of truth in general, and that the discovery of truth is within the reach of the human mind. The Romans, for their part, cultivated the science of jurisprudence in the most comprehensive form, the doctrines of civil rights and obligations; and their discoveries in that science, with the method of its procedure, came to have the strongest influence upon the educational systems and the habits of thought in Western Europe, from the time of the Roman Empire, through the Middle Ages, and to the present day, especially in France and Italy, Germany and Spain. But Dr. Whewell further remarks, that neither the study of geometry and mathematics, nor that of the Roman law and general jurisprudence, nor both studies together, can give the intellect all its needful discipline, because they are both deductive sciences, in which every conclusion is to be demonstrated from axioms or first principles. He even suggests that an exclusive attention to processes of deductive logic may have an injurious effect on the mind, and unfit it for the investigation of truth in subjects requiring a different mode of treatment. The remedy or preventive of this evil is to cultivate the inductive faculty by the study of one or more of the natural sciences. "The knowledge of which I speak," says Dr. Whewell, "must be a knowledge of things, and not merely of names of things; an acquaintance with the operations and productions of nature, as they appear to the eye, not merely with what has been said about them; a knowledge of the laws of nature seen in special experiments and observations, before they are conceived in general terms; a knowledge of the types of natural forms, gathered from individual cases already made familiar. By such study of one or more departments of inductive knowledge, the mind may escape from the thralldom and illusion which reigns in the world of mere words."

Has this been done? asks the late Master of Trinity; has the plan of a liberal education been thus extended? The answer is to be found in the evidence laid before the Public School Commissioners, some extracts from which are reprinted in the Appendix. We have the testimony of such witnesses as Sir John Herschel, Sir Charles Lyell, Professor Owen, Professor Faraday, Professor DeMorgan, Dr. Joseph Hooker, and Dr. W. B. Carpenter, who agree in saying that, as the physical sciences and natural history have been almost entirely ignored in the teaching of the higher classes in this country, they find daily occasion to lament their deficiency of those faculties of observation and judgment which studies are proper to exercise. In this respect it appears to Professor Owen and Sir Charles Lyell that the middle classes, who have not had the advantage of going to Eton or Harrow, to Oxford or Cambridge, are not quite so ignorant as their superiors in social rank. "If I were to select any," says Professor Owen, "it would be the governing and legislative class, which, from the opportunities I have had of hearing remarks in conversation and debate, appears to be the least aware of the extent of the many departments of natural history, of the import of its generalization, and especially of its use in disciplining the mind." Mr. Herbert Spencer's remarks on the elements of a political education, and Dr. Hodgson's admirable sketch of the subjects of economic science, forbid us to allow that presumption.

"The Education of the Judgment," however, which is the title of Professor Faraday's discourse, includes yet more important considerations. We earnestly commend its perusal, in connection with the other lectures and addresses, which show precisely how the judgment is to be trained by means of the several branches of natural science; as, for example, by the study of physics, chemistry, vegetable and animal physiology, botany and zoology, of which respective branches

Professor Tyndall, Dr. Daubeny, Dr. James Puget, the late Professor Huxley, and Professor Huxley, are the masterly exponents and champions in this volume. The advice of Dr. Faraday is inspired by a quiet and homely wisdom, allied with the simplicity and humility which are the most beautiful accomplishments of the true philosophical spirit. It leads us to view this matter in the light of a moral and religious duty, as we are responsible for the use of our minds.

We have no intention here to notice another aspect of the question, with reference to the practical benefits that must result from applying scientific methods of inquiry to the study of human nature, as in the newly-discovered truths of cerebral psychology and of the conditions of social life, the phenomena of which have seldom been examined in the true spirit of scientific research. On this part of the subject Dr. Youmans, the editor of the essays, himself supplies a very instructive chapter. But the argument for scientific education purely for the sake of mental culture is enough to call for immediate attention. It is a challenge not to be shirked, and not easily to be refuted by literary antiquaries or pedants of scholastic routine. The existing fault will be admitted and amended by the consent of all but these. It seems to be high time, for much goes wrong just now for want of a check on the vagaries of an unphilosophical imagination. Dr. Faraday deploras the belief in spirit-rapping and table turning; he finds that even great mathematicians and fine classical scholars are liable in such cases to a fatal paralysis of judgment. The complaint extends to all human affairs. Everywhere is a lack of clear, definite, and consistent opinions. The imagination runs too wild: chaos is coming again. It was not so with our forefathers. The Englishmen of the eighteenth century drank harder than we, but they had more intellectual sobriety. We, too, might have learned from John Locke the duty of cherishing habits of regular thinking. Is physical science, after all, a physis and medicine for silly and feeble minds? Then one ought not to be a fool, if one may be cured. "Keep thy heart with all diligence," is a precept enjoining some care of the understanding as well.

FOREIGN ESTIMATE OF AMERICAN SCHOOLS.

M. EMILE de Laveleye has published in the *Revue des Deux Mondes* an article on "The Instruction of the People in the Nineteenth Century." We extract from the *Educational Monthly* a translation of the first part. It will be seen that the writer is very strongly impressed with the influence which the common schools have exerted in building up the Union, quickening its industry, preserving its liberties, and placing the refining pleasures of reading within the reach of all its citizens. If British America is to maintain a successful industrial competition with the Republic, and there is no reason why it should not, its people must not lose the race at the outset by neglecting that which lies at the foundation of the industrial success of any people,—the Common Schools.

"More attention is now paid to the education of the masses than at any previous time, not only in Europe, but throughout the world. In France, M. Duruy, minister of public instruction, has lately made a report in which he exposed with commendable frankness the condition of elementary education, and urged the necessity of thorough reforms. M. Natoli, minister of public instruction in Italy, has also had the courage to show, in documents submitted this very year [1866] to Parliament, what remains to be done to dispel the ignorance that rests upon the inhabitants of that country. England, displeased at the slow progress of her schools, orders repeated investigations, and endeavors, without much success hitherto, to improve a system whose too evident imperfection is plainly recognized. Portugal tries a new system into which modern ideas have been introduced; and Russia, in the midst of her social and political difficulties, finds time to consider the subject and devise improvement. In Holland, in Belgium, this problem continually occupies the public mind. In short, in Australia and in Canada, in Chili and in Brazil, in countries of Latin origin no less than in those of Anglo-Saxon, thoughtful attention is bestowed upon this subject. Everywhere the means of diffusing intelligence, of making education accessible to all, obligatory upon all, are sought; efforts are made to perfect methods, normal schools

are organized, school houses are multiplied, the position of instructor is held in higher esteem, and there is hardly any disposition to shrink from the pecuniary sacrifices demanded by these improvements.

In fact one must be blind not to see that the future of nations depends upon their intelligence. Many reasons may be adduced to prove this. I will mention but three. Bacon's admirable saying, "Knowledge is power," is well known. Nothing is truer, especially from an economical point of view. It is the knowledge of natural laws that renders labor productive. The savage with acute senses, and a body inured to all kinds of fatigue, lives in misery and often dies of want. He is unacquainted with the forces of nature, and they prove too strong for him. The civilized man, after five thousand years of study and discovery, has penetrated their secret: he makes them his servants, and henceforth, with lightened labor, he reigns over conquered matter in the midst of plenty. In future the richest nation, and consequently the most powerful, will be that which shall apply the most knowledge to labor.

While education is indispensable to the increase of wealth, it is no less needed to teach its proper use. Hardly anywhere are the wages of the workman sufficient to satisfy his reasonable wants, and yet what a large portion does he devote to useless or even injurious objects. Incapable of foresight, his views limited to the present, he does not appreciate the value of economy. Fond of excessive and sensual excitement, he too often finds pleasure only in intoxication, and, if he earned more, he would only drink the more. He must acquire by education a taste for intellectual enjoyments before an increase of wages will really improve his condition. A nation must be intelligent to produce largely and dispose wisely of these multiplied productions. The historian, Macaulay, remarks that if in the eighteenth century Scotland, lately poor and ignorant, excelled the English in all departments, this superiority resulted from the fact that the Parliament at Edinburgh had given to Scotland a system of national education which was wanting in England. In the United States, manufacturers say that if they can compete with Europe, although they have to pay twice as high wages, it is because their workmen, being better educated, work faster and better, and know how to make more use of machinery.

To this economical reason is added a second, derived from political considerations. Democracy is gaining ground, it is often repeated, by the friends of freedom with joy, by its foes with alarm. Equality is making progress in monarchies as well as in republics, in Russia no less than Switzerland. The result is that either by revolutions or reforms the number of those who by their votes have a share in the government of their country, is continually increasing. Already universal suffrage has been established by several nations. Almost everywhere the impatient masses are demanding the ballot, and even aristocratic England is preparing to grant it. This democratic movement depends upon causes so profound and so general that no sovereign, no party, no coalition, can arrest it. We must then make the best of it, and to this end each extension of suffrage should be the consequence of an advance in public intelligence; men should administer the affairs of society only when they are capable of wisely managing their own. Give the ballot to an ignorant nation, and anarchy will result to-day, despotism to-morrow. An enlightened nation, on the contrary, will soon be a free nation, and will preserve its liberty by knowing how to use it. True freedom is insured by education reaching even to the remotest cottage of the remotest hamlet. Preceded or closely followed by the diffusion of education, universal suffrage is the exercise of a right, and a sure source of strength and greatness; accompanied with persistent ignorance, it may be the source of incalculable evils.

I will add a final consideration. A great danger may threaten modern civilization. If, at the same time, that a general desire for improving their condition pervades the people, intelligence and morality are diffused among all classes, so as to inspire justice on the one hand, and on the other the patience required by peaceful reforms, steady progress is insured; but if we maintain education, wealth and selfishness in the upper classes, ignorance, poverty, and envy in the lower, we must expect bloody revolutions.

What has just been said may seem common-place, for scarcely any one now boasts the advantage of ignorance. Ministers and deputies, books and journals, proclaim with one accord the absolute necessity of education; but it is

doubtful whether men's minds are prepared to meet the necessary sacrifices to accomplish the work. That we may not deceive ourselves in this matter, it is profitable to study the methods adopted by those nations that have most nearly approached the end in view. A single example will show at what cost education has been diffused among a people.

There are, I think, four nations that can say with laudable pride that all their citizens can read. North Germany, Norway, Switzerland, and the United States, but only in the one last named does every one read for information, for diversion, to become acquainted with public affairs, to find out how to conduct business better and earn more money, or to learn more concerning the great truths of religion.

There is twice as much printing there as elsewhere, and the Union alone consumes as much paper as France and England together. According to statistics, the number of subscriptions to journals divided by the number of inhabitants gives more than one subscription to a family. Daily papers are issued by the hundred thousand copies, and some weeklies have a circulation of four hundred thousand. All travellers who visit America are impressed with the fact that everybody—the common people as well as others—is occupied in reading. In the spring of this year I visited the noble federal frigate, the *Niagara*, which lay at anchor in the harbor of Antwerp. Every sailor who was not on duty had a book, a magazine, or a journal in his hand. In Europe on leaving school, or when a young man enters the army, the statement is made that he can or cannot read a few lines; but this superficial knowledge of the printed letter is generally of little advantage to him: he does not use it. In America reading is a daily habit, the source of public prosperity, and the essential condition of the permanence of republican institutions.

The common school, all Americans confess, is the foundation of the State—the true bond of the Union. Free to all, open to all, receiving the children of all classes and all faiths, it obliterates social distinctions, softens religious animosities, eradicates prejudices and antipathies, and inspires each heart with a love for the common country, and a regard for free institutions. It is amazing to see the mass of foreigners annually introduced by emigration so soon absorbed into the American nationality. It is the school which, from the first generation, imprints upon them the seal of the national manners, imparts to them the prevailing ideas, and renders them capable of exercising a citizen's rights. Without the school the Union long ago would have ceased to exist, rent by factions, engulfed beneath the waves of ignorance continually flowing into it from Germany, and especially from Ireland. Recent calculations show that if all immigration had ceased in 1810, the free population of the United States, instead of amounting in January, 1864, to 29,902,000, would have reached only ten and a half millions. The immigrants and their descendants constitute then two-thirds of the population. It is due to education that this primitive stock, so inferior in number to the foreign element, has been able to assimilate them and communicate to them the peculiar characteristics that distinguish the old Anglo-Saxon and Puritan race.

How often during the late civil war was it predicted that the West would separate from the Atlantic States, and that California would form an independent republic on the shores of the Pacific! In fact, the friends of the North were not without fear of this result. Those distant States might have deemed it an easy way of escaping the fearful sacrifice of blood and treasure demanded by the war; but they did not even think of it. The schoolmasters, either natives of New England or imbued with her spirit, had already awakened the sentiment of nationality in these newly-settled communities, and the school was the strong bond that held together all the parts of the stately structure. Europe has justly admired the energy of this young nation which in four years could furnish, in defence of a just cause, two million men and four billion dollars. It is an unexampled proof of power and wealth; but it is still more remarkable and commendable that this nation, in the midst of heavy taxes to which it was wholly unaccustomed, has supported a government demanding these sacrifices which only victory could justify. It is an indication of great wisdom and foresight of which an ignorant nation would be incapable. The school proved the salvation of American democracy."

BRIEF NOTICES OF BOOKS.

THE NOVA SCOTIA ELEMENTARY ARITHMETIC, by W. R. Mulholland. A. & W. Mackinlay, Halifax. This work has been provided in order to furnish a suitable textbook for pupils who, by previous oral training, are prepared to begin the study of the science of Arithmetic, and its more simple applications. The author evidently believes that it is idle to attempt to teach oral arithmetic by means of a text-book! Every experienced teacher must be at one with him on this point. The absence of all such attempt from this book is a negative virtue not to be overlooked. Its excellences seem to be many, and we think that good teachers will welcome the book as a true helper. The "self-testing" exercises must lend much interest to the usually dry processes of addition, subtraction, multiplication and division; and the graduation of the various exercises cannot fail to remove many of the difficulties frequently experienced in teaching arithmetic. The typography of the book does credit to Mr. Barnes. This arithmetic has been prescribed by the Council of Public Instruction, and is supplied to Trustees at half cost. See Official Notices.

THE PROVINCIAL MELODIST, published by A. F. Porter, Halifax, is the title of a new collection of Hymns and Tunes for Sabbath Schools and the Social Circle. The tunes are arranged with the four parts.—the lower staff contains the bass; the second, or middle staff, contains the treble or air, and the alto; the upper staff contains the tenor. The selection of hymns and tunes is excellent, and teachers and directors of Sabbath Schools will find the Melodist equal, if not superior, to imported works.

We have received the second volume of the "LIFE AND WORKS OF HORACE MANN," in five volumes, edited by Mrs. Mary Mann. These works are published by subscription only, at \$3.00 a volume, American currency. The position occupied by Horace Mann, in connection with public education in the United States, gives an abiding interest to his works among educators in all lands. No man ever put more love and faith into his work. In almost every town and village in Massachusetts, he pleaded with an eloquence worthy of his theme, for educational reform. The best modes of to-day are not in advance of the views he advocated. In the summer of 1865 we witnessed, with multitudes, the uncovering of the statue erected by the teachers of Massachusetts to commemorate the signal service rendered to the cause of education by this great and good man. Teachers in Nova Scotia should not be ignorant of the writings of the foremost advocate of public education. These volumes should find a place in every teacher's library.

SCHOOL DISCIPLINE AND SCHOOL MANAGEMENT

From Northend's "Teacher's Assistant."

II.

Never threaten to inflict a certain mode or kind of punishment for certain anticipatal offences.—Different pupils require different inducements and different methods of discipline. As no two cases of transgression will be precisely similar in all their bearings and particulars, so it will not be wise to have a uniform and undeviating kind of punishment for all offenders. Aim always to deal justly and impartially; and in order that you may so deal, you must carefully weigh all circumstances, and studiously adapt your discipline, both in kind and in degree, to the peculiar temperament and disposition of each offender. Let the motives and circumstances attending the error always be duly considered. The following incident, which I find in the *Canada Journal of Education*, will illustrate my position, and, I hope, convey a good lesson:—

"My third attempt at teaching was in the parish of St. A.—. I had been engaged in the ordinary duties of a common school for three or four weeks, when, on a very cold, bright day in January, a group of children arrived rather earlier than the usual hour. They were all new pupils, except one. This was pleasing to me. As the children approached, I heard sobbing, and, upon opening the door, the lad, who had previously attended the school, entered, leading by the hand a little girl about seven years of age. Her eyes were large and blue; her hair, which was too fair to be golden, hung around her neck in little ringlets, her cheeks were red, though partly concealed by frozen tears. Her complexion was very fair, and her features of an exquisite mould. Her cousin Charley was about twelve years of age, tall, and well formed; his eyes were black, and his hair was of the same color, his features were regular, and indicative of intellect as well as benevolence. As Charley entered, he said, 'This is Cousin Polly; she's coming to school, please, Sir, and I told her you wouldn't whip her if she is a good girl; she's crying with the cold.' With a little chafing of the cold hands and the aid of a good fire, Polly soon became comfortable. After this introduction, Polly, Charley, and myself were very good friends. Time glided pleasantly away, for we had a most agreeable assemblage of youth, and, with one exception, a pleasant school-room. The exception

was, that two of our windows overlooked the highway, and thus presented a temptation to violate the rules of discipline, by looking at passers-by in the time of study. The winter was nearly over, and I had become strongly attached to Charley and his Cousin Polly, for they were docile and obedient,—seemingly full of affection for me, as well as for each other. I had never had occasion to chastise either of them during the term. Indeed, I had to be cautious about addressing them in a hasty or excited manner, else they would have burst into tears immediately; and to speak harshly to them would be worse than *chipping* some children. One day, near the close of the term, I had been disturbed several times, while attending to classes, by the scholars seated near the windows already mentioned. They would rise from their seats to look at any vehicle which might be passing. After having been interrupted three times while engaged with a class, and as often remonstrating, I lost patience, and said that I should ferule the first one who arose again to look out of the windows. After this announcement all were very quiet for some time; but before I had concluded the exercises of my class, I heard a noise, and, looking around, I saw Polly standing upon a desk and stretching past two girls to look out of the window. Here was a case. All eyes were upon me. I had described a certain kind of punishment, and pledged my word to inflict it upon the one who should violate the rule. Polly was the last one I deemed likely to be guilty, and the last person in the school whom I wished to punish in such a manner; but now my only alternative was to break my word or to punish Polly. I called her to me, she came, with tears in her eyes. I asked her why she wept? She said she was sorry she had forgotten the rule; that she had been told, by Fanny Conly, that her papa and mamma were coming for her in the sleigh, and she got up to look out without thinking. I replied, "If I should not punish you as I said, I should be guilty of an untruth, which is sinful, and I should lose your respect and esteem, as well as that of your schoolmates." "O dear! yes, you must punish me," said Polly, with a gush of tears, "but I feel so bad because I cannot help it now," and she held out her hand. I stood up as though I was about to inflict the expected blows, when Charley approached, and, holding out his hand, said, "Please, master, whip me, and don't whip Polly." From this little incident I learned two things about discipline;—first, never to pledge myself to any particular kind of punishment beforehand; and second, that children often shed tears because their error is past recall, or, in the words of Polly, "because they cannot help it now," when their teachers suppose they are crying for fear of the punishment."

A particular offence does not necessarily call for the infliction of a specific punishment.—All attendant and palliating circumstances should always be taken into account in deciding upon disciplinary measures. A course that would be highly salutary in one case, under one set of circumstances, would prove far otherwise in another case, and under other circumstances. A certain physician once had as a patient an Englishman. The disease was fever. He allowed the patient to partake frequently of chicken-broth. The sick man was restored to health; and the doctor wrote in his note-book, "Chicken-broth is good in case of fever." His next patient was a Frenchman, and the disease fever. He was allowed to partake of chicken-broth, and died. The next memorandum in the note-book was, "Though chicken-broth is good for an Englishman in case of fever, it will kill a Frenchman." From this learn a lesson in school discipline, and study to adapt the mode of discipline to existing circumstances and peculiarities, and never feel that the same means will always produce the same results.

Be calm and self-possessed.—Never give your pupils opportunity to feel that they can annoy you; for if they find you over-sensitive, they will ever be on the alert to do things which will vex you. But while you aim to let them see that you control yourself, be sure also to have them feel that you shall control them; and that any degree of impropriety on their part will be duly considered, even though it may not receive immediate notice. It is well, occasionally, to let certain errors and deviations pass, apparently unnoticed, during the day, and be taken into consideration at a quiet hour after school. In a calm but firm manner, call the offenders to an account, administering such punishment, or censure, as may seem necessary. Do not forget that there is a right time, place, and manner in which to say things, and never administer reproof or punishment, when either the erring or yourself are in a state of undue excitement.

Cultivate habits of neatness and courtesy as helps to discipline.—If you can so inspire a boy with feelings of self-respect, that he will always enter the school-room with his person and apparel in a neat and cleanly condition, you will at the same time create within him a desire to regard the rules of the school. If, in addition to this, you can induce him to regard the rules of propriety and courtesy in his manner and conversation with others, you may be quite sure all else will be right. A courteous pupil will, almost as a matter of course, be an obedient and attentive pupil.

You ask, if you must ever resort to corporal punishment. In answer to this, I wish I might feel warranted in saying that it is never necessary. I hope the time may come when it will be wholly unnecessary; but I do not believe that time has yet arrived. I will advise, however, that you inflict corporal punishment as seldom as possible. Make it your "strange work"; and when you resort to it, do it in such manner and in such spirit as will make the right impression. In most cases, I would recommend that corporal punishment be inflicted in private; and yet there will be cases, in which the greatest good of all concerned will require that the punishment be inflicted in the presence of the whole school. If a boy wilfully sets at defiance all wholesome authority, and says or does things, in the presence of the whole school, for the purpose of showing that "he will do as he pleases," the better way will be to administer to him the well-deserved punishment in the presence of all who have witnessed the transgression. If, however, you can secure the entire co-operation of the parents, you will not often have any trouble of a disciplinary nature. I do not hesitate to express the belief, that, when all teachers shall be thoroughly qualified for their high duties, and enter upon their discharge with an earnest fidelity, and when all parents shall be faithful in training their children in "the way in which they should go," we shall hear no complaints touching school discipline. But until that good time shall come, the best of teachers may sometimes find

it necessary to resort to corporal punishment; but ordinarily, the higher the qualifications of the instructor, the less frequently will such occasions occur.

Never scold.—If whipping is objectionable, scolding is much more so. If you speak in fretful and fault-finding tones, your pupils will soon lose all respect for you, and they will, to a great extent, partake of your spirit. In such things "like produces like." Mild and pleasant tones, combined with a firm and determined manner, will, in most cases, secure the desired result. I once visited a school, kept by an accomplished lady, who ever exercised the most perfect control over her feelings and actions. A class was called upon to read. It was one of those disagreeable things,—an obstinate, mulish girl. When her turn to read came, she paid no regard to it. The teacher very pleasantly, but firmly, said, "Read, Mary." But, in stubborn expression, Mary's countenance said, "I won't." The teacher, with the utmost composure, said, "You may continue standing, and the next may read." Wishing to know the teacher's plan in such cases, I asked what she intended to do in this instance. Her reply was, "I shall let my patience have its perfect work, and Miss Obstinate will not be allowed to leave her place, until she has performed her part; and as the regular time has passed, she must await my time,—which will not be until every other lesson has received attention, and the faithful pupils have been dismissed." Throughout the whole, the teacher was as calm as a summer's day, and I doubt not that the plan adopted was entirely effectual.

Never attempt to frighten a pupil into obedience.—Temporary subjection may be secured by terror, but it will not be a true submission. The motive is a wrong one, and the result will have no permanency. Let it be ever your aim to exercise that influence over your pupils, which will lead them to respect authority, and to do right, from high and honorable motives. So far as possible, train them to habits of self-control and self-discipline. Be to the little ones under your care an example of all that is "lovely and of good report," ever manifesting on your part a willing and prompt obedience to the higher powers. Remember always that

"The mind, impressible and soft, with ease
Imbibes and copies that she hears and sees,
And through life's labyrinth holds fast the clew
That first instruction gives her, false or true."

How important is it, then, not only that right impressions be made on tender minds, but also that they be made in the right way and in the true spirit. It is unquestionably true, that parents and teachers do wrong by being over-exacting and over-rigid in their treatment of the young, not making sufficient allowance for youthful feelings and buoyancy of spirit.

Have system in relation to all your exercises.—This will be of great service to you in the discipline of your school. Have a time for every recitation, and have every recitation at its proper time. See that every pupil has work enough to occupy his time, and do all you can to make every lesson interesting by illustrations of your own. Pupils love order and system; and, if they are kept properly employed, they will not be tempted to wrong action. Nothing is more true, than that a certain noted "busybody" has always some mischief for idle hands to do; and if you fail to give your pupils useful work, he will give them that which will greatly increase your labors and trials.

Aim earnestly and constantly to make all the exercises of the school-room pleasant and attractive.—Many a child has acquired an unconquerable dislike of school, and all that pertains to it, on account of the forbidding manner or injudicious chiding of unwise teachers;—even as some children, from ill-treatment at home, have been brought to regard any place as more attractive than home. On this point let me quote from the quaint language of Roger Ascham, in "The Schoolmaster," published in London, in 1571.

"Yet some will say that children of nature love pastime, and dislike learning, because in their kind one is easy and pleasant, the other hard and wearisome. Which is an opinion not so true as some men wene. For the matter lieth not so much in the disposition of them that be young, as in the order and manner of bringing up by them that be old; nor yet in the difference of learning and pastime. For beat a child if he dance not well, and cherish him though he learn not well, ye shall have him unwilling to go to dance, and glad to go to his book; knock him always when he draweth his shaft ill, and favor him again though he fault at his book, ye shall have him very loth to be in the field, and very willing to go to school. . . . And one example, whether love or fear doth work more in a child for virtue and learning, I will gladly report, which may be heard with some pleasure, and followed with more profit.

"Before I went into Germany, I came to Brodegate in Leicestershire, to take my leave of that noble Lady Jane Gray, to whom I was exceedingly much beholden. Her parents, the Duke and Duchess, with all the household, gentlemen and gentlewomen, were hunting in the park. I found her in her room, reading 'Phaedo Platonis,' in Greek, and that with as much delight as some gentlemen would read a merry tale in Boccaccio. After salutation and duty done, with some other talk, I asked her why she would lose such pastime in the park? Smiling, she answered me, 'I wist, all their sport in the park is but a shadow to that pleasure that I find in Plato. Alas! good folk, they never felt what true pleasure meant.' 'And how came you, madam,' quoth I, 'to this deep knowledge of pleasure? And what did chiefly allure you unto it, seeing not many women, but very few men, have attained thereunto?' 'I will tell you,' quoth she, 'and tell you a truth which perchance ye will marvel at. One of the greatest benefits that God ever gave me is, that he sent me so sharp and severe parents, and so gentle a schoolmaster. For when I am in presence of either father or mother, whether I speak, keep silence, sit, stand or go, eat, drink, be merry or sad, be playing, sewing, dancing, or doing any thing else, I must do it, as it were, in such weight, measure, and number, even so perfectly as God made the world; or else I am so sharply taunted, so cruelly threatened, yea presently sometimes with pinches, nips, and bobs, and other ways (which I will not name for the honor I bear them) so without measure misorderd, that I think myself in hell, till time come that I must go to Mr. Elmer, who teacheth me so gently, so pleasantly, with such fair allurements to learning, that I think all the time nothing while I am with him. And when I am called from him, I fall on weeping, because what

soever I do else but learning is full of grief, trouble, fear, and whole mislik'ng unto me. And thus my book hath been so much my pleasure, and bringeth daily to me more pleasure and more, than in respect of it all other pleasures, in very deed, be but trifles and troubles unto me."

May not parents and teachers draw a lesson from this?

In closing, let me urge upon your attention, briefly, the importance of making your school pleasant and attractive, by doing all you can to make its lessons clear and interesting. Let the pupils see that they have in you a sincere friend,—one who loves them, and wishes to do them good. Study carefully their natures, dispositions, temperaments, peculiarities. Learn what you can of their home-training and "out-of-school" influences. Gain their confidence and secure their affection, and you may guide and control them at will. So far as circumstances will allow, cultivate the acquaintance of the parents of your pupils, and strive to inspire them with the feeling that you are but a co-worker in the business of educating their children. If possible, cause them to feel that they can aid you, and that you have a just claim upon their cheerful and constant support and co-operation. With the good-will and kindly feelings of your pupils, and with the approving efforts of their parents, you will be strong for any work; without these, you will labor at great disadvantage, and your best intentions and plans will fail of accomplishing what you may desire to accomplish.

THE ATMOSPHERE OF A WORLD ON FIRE.

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I COULD have wished, had the facts and the truth permitted, to have adopted a title to this communication somewhat less sensational than the one which has just struck the eye, and no doubt has arrested the attention of the reader. Men and women during the last ten months have gone on pretty much in the old quiet way of their daily routine, little aware, that all along, to the instructed philosophic eye, there has been visible one of the most strange and unexpected phenomena that science has yet disclosed to the human mind. A star, or rather the atmosphere of a star, has been observed on fire. Happily for the general composure of mankind, the star in question is one which we impertinent mortals are wont to call a small one, and certainly it is a very distant one; had it been otherwise, had the catastrophe occurred to Jupiter, for instance, or to the Dog Star, or even among the Pleiades, it might have been difficult for the majority of men to quiet their expectations, or to control their fears.

But the reader will be disposed to ask, and, perhaps, with no unreasonable patience, when did all this happen, and where? Strange to say, I cannot tell you *when* this outburst in reality occurred; the fiery message from the stars does not reach our earth in the brief flash of a moment, like the electric thrill from Europe to Newfoundland; and the phenomena of which I shall attempt to speak, though first observed on the 12th of last May, may have happened even centuries ago, and *cannot* have happened within the last three years. But of this I shall speak again. Nor is the reply to the question, *where* was this strange event, more satisfactory to the general reader; for the seat of this mighty out-burst is now so pale, that an instrument which, in the hands of the great Tuscan philosopher, was powerful enough to disclose the satellites of Jupiter, and revealed to him the ancient secret of systems of revolving worlds, would be insufficient to make this star even visible. Nevertheless, the evidence of a vast conflagration in this, to us, faint spangle of a distant sun, are so various and so strong, that but little doubt of its actual occurrence is left in the minds of men, who are gifted with a power to interpret those letters of light which are written by no human hand on the vault of heaven.

I shall now proceed with the description of the phenomena itself, first, as it appeared to the naked eye; next, as it appeared in an ordinary telescope; and, lastly, I shall explain what inferences are to be drawn from observations made with some curious appliances of modern research.

On the 12th of last May, near to midnight, at Tuam, in Ireland, Mr. Birmingham, a gentleman well versed in the configuration of the starry heavens, observed a new bright star in the small constellation Corona Borealis. To the initiated eye the boundaries and elements of this constellation are among the best defined field-marks in the sky. If, however, the reader is as yet uninitiated in this pleasant lore, let him follow the stars on the back and through the tail of the Great Bear, and his eye can hardly fail to rest upon a little diadem of six golden lights, which, without any great stretch of imagination, he may conjure into a representation of a semi-crown of gems. If his eye be acute enough, he may find attached to it another somewhat similar circlet of much smaller stars. If he look again, and is able to recognize even Arcturus and Vega (α Lyrae), two of the brightest stars in the heavens, he will find this constellation, Corona Borealis, situated in a line between the two, but much nearer to the former.

Well, in addition to the six familiar stars, which, as I have said, form the conspicuous semi-chaplet in question, Mr. Birmingham, to his intense surprise, observed a seventh, close to that one in the constellation which is the last of the six, reckoned in the order of the apparent motion of the heavens from east to west. There could be no mistake in the position of the star, and a gentleman whose knowledge was sufficient to enable him to notice this new apparition, could not have mistaken its relative magnitude or brightness, seeing that so many stars of comparison were close in view. The strange new star was, beyond a doubt, nearly, if not quite, of the *second* magnitude. Mr. Birmingham (all honor to him) thus became the discoverer of a new sun—a new centre, that is, of light and focus.

In process of time, news came from the other side of the Atlantic, that the same celestial outburst had been seen in America on the 14th of May. No other observer in Europe appears to have seen it at so early a date. It may appear a strange circumstance that so conspicuous a star should have escaped the notice of the many zealous astronomers who now abound in our land. The fact is, in these days of wonderful mechanical appliance, men shut themselves up in their comfortable and

well-equipped Observatories, they take down their star-catalogues, they look at their clocks, they set their circles and their instruments, they throw into gear the delicate mechanism which drives their telescopes, compelling them to move precisely as the heavens move, and leisurely, and with almost provoking tranquillity, they at length open the shutter of their Observatory, and without further trouble or alteration, there is the star or the planet in the very centre of the field of the telescope!

No doubt this is extremely convenient and very scientific; it is also one, among many other, notable instances of human knowledge and ingenuity; but at the same time it has become somewhat fatal to that sort of desirable knowledge of the configurations of the celestial lights, which Chaldean shepherds of old possessed, who watched in their fields by night. Men such as these have laboured effectively in their day, and we have entered into their labours, reaping the harvest of their peculiar toil.

About midnight then of the 12th May, Mr. Birmingham observed the apparition of a new star of the second magnitude: less than three hours before this, Dr. Schmidt, the able and zealous observer at Athens, was watching the same constellation, and he confidently asserts that no strange star even of the fourth magnitude could possibly have escaped his notice. Consequently we have here unquestionable evidence of the sudden rise of a star from below the fourth up to the second magnitude. It may here be well to explain that the rise of what is technically called one magnitude of a star, implies an increase in the intensity of its brightness of about two and a half times; consequently, in the short space of less than three hours, this newly discovered sun must have increased in the intensity of its light at least *sixfold*.

Now consider what this state of things implies. Conceive for a moment what would be the case with ourselves if on some given day, between the hours of eleven and two, our sun were suddenly to blaze forth with six times its ordinary splendor, and with a corresponding increase in heat. Surely there would be a pause in the bolting of armor plate and in the casting of conical shot; the whirl of the cotton-mill and the clang of the hammer would be hushed; the mart would be deserted, and trafficking in shares would come to an end. Surely great would be the searchings of spirit, and the thoughts of many hearts would be revealed. Yet something of this sort must have occurred in the systems which revolved or will revolve round this distant sun. Meanwhile we mortals worked and slept. Blissful is that ignorance which, in the midst of what would be terrible, if known, enables accountable beings in quietness and peace to discharge their proper and allotted toils.

But to proceed: on the 15th of May, the new star was observed by Mr. Baxendell, of Manchester, and on the following day, in consequence of intelligence from Tuam, it was examined by Professor W. A. Miller and Mr. Huggins, at the Observatory of the latter gentleman, on Tulse Hill, near London. It was now in the hands of persons who in their respective specialities are among the most competent observers in the kingdom. Mr. Baxendell, by his great experience and natural gifts, was known to have no superior for definite accuracy in the comparison of the magnitude and varied colours of the stars, while the other gentlemen were equally eminent for the application of the Spectroscope to the analysis of the nature and sources of stellar light.

It is surely far from a sign of the decadence of a country, which like our own, by its natural habits and free institutions, produces a supply of men, who for no fee or reward, but impelled by the love of the thing, and often when their proper day's work is done, set themselves, at the cost of expenditure and toil, to consume the hours of midnight in increasing the knowledge of their fellow-men, and in searching into the wonderful works of the Great Creator. We may be thankful that not a few such men exist in England, and among them none are worthier than the three gentlemen whose names have been mentioned above.

I shall now proceed to give the results at which Mr. Baxendell arrived in his examination of this remarkable star.

On the 15th of May it had decreased from the second magnitude, which it had attained when observed at Tuam, to nearer the fourth than the third magnitude when first seen by Mr. Baxendell at Manchester. It then continued to diminish with very great rapidity, until on the 26th of June it had sunk to nearly the *tenth* magnitude, and thus had ceased to be visible except in excellent telescopes alone.

Thus the intensity of the star's light on the 12th of May was fully five hundred times greater than on the 26th June.

Nor were the variations in colour much less remarkable. When first seen there was a slight nebulosity about it, and there was a bluish tinge, as if the yellow of the star were seen through an overlying film of a blue tint. After the 25th of May this bluish tinge disappeared, and the colour changed through many various tints of orange and yellow.

From the 26th June to the 20th of August, things remained without observable change, but, strange to say, a *second outburst of light* commenced at the latter date. By the 15th of September it had risen two magnitudes, that is to say its light had become *sixfold*. The star then remained apparently tranquil until the 9th of November, when it once more began to decline, and at the present time has nearly diminished to its least observed intensity. Its colour varied from a *pretty bright yellow* on the 17th of September, to a *light orange* on November the 6th, and then fading through a *dull orange* is now of a *dullish white*.

If the state of our scientific knowledge were now no further advanced than it was about seven years ago, there could be no definite conclusions relative to these two singular outbursts of light, which could safely be drawn, even from the elaborate and accurate observations of Mr. Baxendell. Nearly all that could be said would be, that we have here one of the most remarkable instances of those *variable stars*, so many of which have been recorded in the annals of Astronomical science. Our thoughts would naturally be carried back three centuries, to the days of Tycho Brahe, who witnessed the sudden apparition of a new star, in brilliancy exceeding the brightest in the heavens, but which he was sure had not been visible half an hour before. The great Danish astronomer, unfortunately for us, had not the means and appliances which since his day have accumulated in the hands of modern observers, and little else was left for him to do, but to gaze, and to guess, and to be astonished.

Science, however, during the last few years has taken one of those sudden bounds which render its annals so fascinating to the student; and especially Astronomical science, owing to many causes, has recently

received a strong impulse in a new direction; and no longer finding the grasp of her powers restricted to the weighing of suns and planets, and to the measuring of their distances, she now aspires to a loftier aim, and hopes she is henceforth permitted by the Supreme Wisdom to understand some little of the processes from whence are elaborated the heat and the light of the sun, and what are the sources of even those paler fires which come spangling to us from the more distant stars.

The means by which this unexpected accession to our knowledge has been obtained, the long train of ingenious experiments (those questionings of Nature) and the logical deductions therefrom, which enable us to say with undoubting confidence, "In yonder star there exists iron at a burning heat; in another, there is incandescent vapour of lime, in almost all of them there are strong evidences of the existence of magnesia and salt, and the recent sudden outburst in the remarkable star of which we have spoken, was owing, in part at least, to the sudden combustion of hydrogen gas;" these things—we may almost call them wonderful things—we shall now proceed to lay before the reader.

In so doing, we fear we shall of necessity make a serious call upon his attention; but, in return, we promise him a rich reward for his exercise of patience. On the other hand, out of hundreds of thousands who will read these lines, there are probably some few who are as familiar as the writer with the simple but beautiful experiments we shall find it necessary to describe. But, even to these few, it can scarcely fail to be pleasant to travel once again over fields which, after all, present an inexhaustible variety; for there are visions of glory which never satiate, and there are truths the contemplation of whose comprehensive simplicity never palls. Among such, we venture to believe, are the laws of interaction which the Supreme Wisdom has impressed upon the material elements which are scattered in almost unbroken continuity through the universe of things.

We strongly advise the great majority of our readers to repeat the experiments we shall detail. With this end in view, we shall describe them simply and fully; and, moreover, we shall intentionally select such as require no great degree of skill, and involve no apparatus beyond such as is utterly inexpensive, and can now be procured in most houses and every village.

Let the reader, then, who desires to follow the train of our reasoning, take a piece of cardboard or stiff paper, about a foot or eighteen inches square; any colour is somewhat better than white, and it must be impervious to light. In the middle of this carefully cut a clean and even straight slit, parallel to one of the sides, not more than the twentieth of an inch wide, and about an inch and a half long. Fix this opaque paper, with wafers or otherwise, against a clean pane of glass in the window of a room, so that the thin slit shall be vertically upright, and at a height from the floor equal to the height of the observer's eye.

Now let him take a glass lustre off a chandelier. It will be best for him to select two or three, without veins, if such can fortunately be found, and much the better if the shape of the glass pendant happens to be, in section, an equilateral triangle; but in modern fashion these glass pendants for the most part have two or three faces perpendicular to each other. Through this rectangular edge vision is impossible, and the reader must avoid it. Now let him stand with his right eye exactly opposite to the slit, and if he can, through the slit, see a bright white cloud, that will be in his favour: his distance from the slit may be eight, or ten, or twelve feet, or even more. The lustre is to be held with one of its acute edges (not the rectangular edge, if it has one) vertically upright, and therefore parallel to the slit and close to his right eye, and with this eye he is to look through the left hand face of the glass. The direction also in which he must look must be towards the left, and, as it were, to some place on the left not quite so far from the slit as he is himself distant from it. He will then see the thin line of light from the slit spread out into a ribbon coloured with a variety of successive colors. The red colour will be nearest to the slit, on the right; and the blue will be furthest, on the left. To see this ribbon of coloured lights will require patience and some humouring of the glass lustre; but to the writer, who, nevertheless, bears in mind Columbus's egg, the whole actual manipulation at this moment has occupied less time than the description. The reader may consider himself fortunate if his own success requires twenty minutes to achieve. Probably he may see a variety of beautiful colored bands flitting about, but what he seeks is the ribbon, which proceeds from the light of the slit, and this he may distinguish from all the others by requesting an assistant to cover over the slit itself with a finger, from time to time.

When the experimenter has at last caught the sight of this beautiful coloured ribbon, or spectrum, as we shall now call it, he will find that, as he humors the glass (always holding its edge vertical) the spectrum itself will greatly vary in length and in its distance to the left of the slit; he must then so place the glass as to obtain the shortest spectrum he can, and then he must gradually open it out a little. If he has succeeded, and unless the glass be very uneven and full of veins, he will now see something not very dissimilar to the following:—At the right edge of the slit, a red color, a little way to the left it becomes orange, then a slight yellow, and then green, and a little to the left of the centre of the slit the colour is blue.

But what he is especially to look for (and what, in fact, is the object of the whole experiment), is the presence of one, or two, or three, or four, black vertical lines, between the colors. The writer himself, after a careless experiment like the one described, at this moment, on a dull day, sees two lines. As we have already said, the sight of these dark lines is the object of the search. They are not to be seen without patience: few philosophers are even now aware that they can be seen at all with so rude an apparatus; and when they were for the first time observed by our great countryman Dr. Wollaston, in 1802, they immortalized the discoverer.

Thirteen years after this, Fraunhofer, at Munich, by diminishing the breadth of the slit, by reflecting the direct sun-light through it from a looking-glass outside, by then using a prism of pure glass, and, lastly, by looking at the slit through the prism, not with the naked eye, but with a small telescope, observed and accurately measured the position of many hundreds of these lines. Without a telescope, if the reader possesses a tolerably good prism, he may readily see more lines than he can count. These lines have henceforth been called *Fraunhofer's Lines*. In fact of priority they are Wollaston's; but, unfortunately, our country-

man did not at once see the importance of his discovery, and he dropped the subject. Newton also, who a century before Wollaston first observed and studied the spectrum, lost the fame of his discovery from the simple fact of not putting the prism close to his eye.

Strange to say, these dark lines contain the key to the enigma of the material constitution of a star, and of our sun, and this is the reason why we have been thus particular in describing the easiest and most simple way of seeing a few of the most conspicuous among them.

The reader will probably have little or no difficulty in understanding that the coloured ribbon of light, called the spectrum, is nothing more than the thin line of light in the slit, spread out. He may conceive this line to resemble a bundle of innumerable coloured faggots, and that the glass or prism, through which they have passed, has arranged them all in an orderly manner. But then comes the question, *What is the significance of the dark interruption? Do the colours which would otherwise properly belong to these dark spaces, not exist in the nature of things? Or do they not exist in solar light? Or are they in reality exist in light emanating from the sun, but subsequently have been absorbed somehow and somewhere? These are natural, inevitable questions occurring in relation to Fraunhofer's lines, but for upwards of fifty years these lines remained a perplexing mystery.* The Sphinx had spoken, but *Œdipus* was not. Who could have perceived that the true solution lay in the existence of heated terrestrial substances dispersed in the sun and throughout the universe?

In 1832—that is just thirty years after their discovery by Wollaston—Dr. Brewster, by a very simple experiment (which we advise our readers to repeat, however roughly) demonstrated that those dark lines are produced by the absorption of those particular colored lines which, in the spectrum, they displace. Let the reader take a candle or a lamp, and in front of it let him place the narrow slit as before, and let him as before obtain the spectrum of the light; he will then see the same sort of beautiful coloured ribbon with which by this time he must be familiar; but he will see no dark lines, it will be continuous and uninterrupted.

But now let him procure a small uncut glass tumbler, in it let him place some small copper coin, and upon it let him, with all necessary caution, pour as much aquafortis (or nitric acid) as will just cover the coin, and immediately place a paper cover on the top, in order to confine the orange coloured vapours of nitrous gas which will presently fill the glass. This glass is to be quickly placed between the light and the slit, and the spectrum is now to be observed. It is no longer the bright interrupted spectrum which he had seen from the lamp before, but the coloured ribbon is crossed with a multitude of lines, greatly resembling, but not identical, with the lines discovered by Fraunhofer. The experiment, if well performed, is extremely beautiful, and one not likely to be forgotten. Here there is a demonstrated fact, that media do exist capable of absorbing light, and of producing a phenomenon closely resembling the dark lines in the solar spectrum.

But then comes the question, *What is it that absorbs certain portions of the solar light? Is it something in the atmosphere of the sun, or something in the atmosphere of the earth? Thus the mystery became increased!*

The next step in advance was taken by Professor Wheatstone, about three years after Brewster's discovery of the absorption of certain lights by certain coloured vapours. By a process of considerable difficulty he contrived to render the vapours of the metals incandescent; and then viewing the light emitted by these vapours through a slit and prism, as before, he found that the spectra did not consist of a continuous coloured ribbon of light, but simply of a few detached bright coloured lines. The incandescent vapours of no two metals gave precisely the same lines. In fact, so extremely definite was the spectrum of each metallic vapour, that Professor Wheatstone did not hesitate to say that by this method the presence of extremely minute portions of the metals could be detected with greater certainty than by any other known process.

The reader may easily try the experiment on a small scale for himself, by burning a little magnesium wire (now, thanks to the wide diffusion of scientific knowledge, so easily procured,) behind the slit, when he will at once recognize a peculiar spectrum of certain bright greenish lines. Or if he drop a little salt into the flames of a lamp or candle, he will immediately see a bright yellow line.

And further, if while he is viewing a good spectrum of the light from the candle, an assistant opens and shuts with some violence an old dusty book close to the light, he will probably see, for the moment, a vast number of bright-coloured lines suddenly start into existence throughout the spectrum. These lines arise from the vapourization and incandescence of a vast number of minute substances collected in the dust.

But these lines in the spectra of metallic vapours—and the same remark applies equally to incandescent gases, such as hydrogen, &c.—are all bright lines, whereas those in the solar spectrum are dark. What, then, is the relation between the two?

And now came a variety of guesses; one might almost call them divinations of the truth. The annals of Science tell us that such divinations of truth beforehand not rarely precede the discovery of great, comprehensive, pregnant truths. They preceded the discovery of the Law of Gravitation; they preceded the discovery of oxygen; they preceded the discovery of electro-magnetism; and even now they seem to loom before the discovery of the yet unknown cause of gravitation itself. Newton divined the combustible nature of the diamond a century before Allen and Pepys succeeded in showing it was nothing more than pure crystallized carbon.

But what is it—we may ask—what is it which, as it were, causes coming and substantial discoveries so often to throw their shadows before them? Is it some single word, or some chance expression, which, as a winged seed falling from one master mind, is wafted, like a rumour, amongst other minds, until, at length, it finds a proper and kindred home, and then germinates and fructifies into the ripeness of some general truth? Or is it that the minds of men, after some unknown process, and in accordance with some magnificent pre-arrangement of the Great Eternal Mind, become, from time to time, by the interaction of circumstances, polarized, and when the tension becomes extreme, break forth at length into the force and light of discovery?

Be this as it may, it is certain, that Professor Stokes, in England; Balfour Stewart, in Scotland; M. Foucault, in France; and M. Angström, in Sweden, all assigned a probable cause for portions, at least, of the

obscure but interesting phenomena before us, and had any one of them followed up his reasoning but one step onwards, he would have anticipated the grand discovery of Kirchhoff which, in 1859, grasped the whole question, and soon laid open to the human mind very much of the material constitution of the sun, the stars, nebulae, and comets.

What Kirchhoff did was virtually this. He demonstrated experimentally that if the vapour of a metal or a gas, when incandescent, emits light of a certain quality, that same metallic vapour or gas, when less heated, absorbs precisely the same quality of light. The vapour of sodium, for instance, when sufficiently heated, emits a bright yellow light, all of which is coincident with the dark line of the solar spectrum; but if this light be made to pass through vapour of sodium less heated than the emitting vapour, it will be absorbed entirely, and no light at all will be visible. And so with other metals and various gases. Here, then, was not only a clear explanation of the origin of Wollaston's or Fraunhofer's lines, but an insight is thereby given into the material constitution of the sun and the same remark applies equally to the stars.

The sun, or the star, must be considered as consisting, first, of some nucleus with its solid or liquid surface intensely heated, so that the light emitted from it, like the light from every other intensely heated solid or liquid with which we are acquainted, affords a continuous uninterrupted spectrum. In front of the incandescent surface must be various heated gases and metallic vapours, and each of these stops precisely those qualities of light which, if more intensely heated, it would emit.*

There was but one step more to be taken in order to prove incontrovertibly that such metals as iron, sodium, magnesium, &c., and such gases as hydrogen, &c., do actually exist in the sun and in the stars. Kirchhoff took this step. Through the lower half of this slit, so often spoken of, he admitted solar light, and obtained its spectrum; through the upper he admitted the light emanating from various incandescent metallic vapours, from iron, for instance. Thus the two spectra lay superposed before him, and admitted the most exact comparison. The iron spectrum consisted of thirty or more definite and widely spread bright lines, and these were absolutely coincident with as many dark lines in the solar spectrum. This coincidence of so many lines, and of all of them, could not arise from chance, but demonstrated the existence of heated iron vapour absorbing certain qualities of light emanating from the incandescent body of the sun. And in the same manner Kirchhoff obtained the spectrum of incandescent hydrogen superposed upon the solar spectrum. The hydrogen spectrum consisted mainly of the bright lines, in absolute coincidence with two of the lines discovered by Wollaston, and marked by Fraunhofer. Hydrogen, therefore, exists in the atmosphere of the sun, and it stops or absorbs the red light, and the bluish green light, which emanates from its incandescent nucleus.

The reader is now in a condition to intelligently understand the evidence upon which we conclude that the remarkable outburst of light in the star which has been described in the former part of this article, probably arose from, or was accompanied by, a conflagration of hydrogen gas. On the night of the morning when the intelligence reached Professor Miller and Mr. Huggins, relative to the sudden appearance of the star, they at once viewed its spectrum with the same admirable apparatus which had already conducted them to so many important discoveries connected with the physical constitution of the heavenly bodies. But what a sight was there revealed to the well-practised initiated eye of a philosopher! There lay before them the evidence which suggested the atmosphere of a star, a sun, a world, on fire. And the evidence was this:—the instrument revealed two spectra, the one superposed upon the other; one of them was the usual species of spectrum generally afforded by the stars, viz., a spectrum interrupted as we have seen the solar spectrum is, by numerous dark lines, and indicating for the star, an incandescent solid or liquid nucleus, surrounded by an atmosphere containing the vapour of sodium, and it may be iron, or magnesium, or various other elements which are found upon this our earth. But besides this spectrum there was another, and that other full of remarkable significance. It consisted of four bright lines, and from their relative position two of them appeared to arise from INCANDESCENT HYDROGEN. This, within their knowledge and experience, was a solecism in the heavens. Of the dark lines in the spectra of stars, evidence enough existed; the significance of those lines was hydrogen indeed, but of hydrogen not heated to extreme incandescence. Here, however, the dark lines were brighter than the contiguous parts of the spectrum, and thus they spoke unmistakably for themselves. But so far the coincidence of two of the bright lines with the dark lines of Fraunhofer was rather suspected than proved, and consequently these cautious experimentalists put into requisition the exquisite arrangements with which they were provided. They produced the spectrum itself of incandescent hydrogen, and they placed it exactly over the spectrum of the star; the coincidence of two of the bright lines of the star with the two bright lines of incandescent hydrogen was absolute. The other two bright lines of the star are not ascertained as yet to indicate the existence of any element known to the inhabitants of this earth.

Thus the sudden outburst of light in this star, or at all events the light of the star, was in great part owing to hydrogen. As the light of the star waned, so the splendor of those bright lines waned, and so also the other continuous spectrum declined in brightness, and we are in a manner forced upon the conviction that the outburst of light was accompanied with the blaze of hydrogen in combustion, which gradually spent itself, and is now nearly extinguished.

But is it possible to make even any plausible guess as to the cause of the outburst of light and heat in this wonderful star! Thoughtful men have already made some guesses, and we shall now venture upon another; it is given simply as a guess and as a mere speculation only, though we hope not wholly an uninteresting one.

On referring to the Royal Observatory, Greenwich, it was soon discovered that this star, now called *T. Coronæ Borealis*, is not a new star, but was very probably observed by Sir W. Herschell, and by Mr. Wollaston; and certainly it is in the catalogue of M. Argelandier, and is there marked as a star of between the ninth and tenth magnitude; just

the feeble brilliance to which it has now sunk. If this star be like other stars, there will be worlds circling round it, and these worlds may like our earth have satellites. Now it is the settled opinion of some cautious philosophers that in the lapse of ages, that is after the lapse of many millions of years—we do not say millions of millions of years—the sun will have lost the greater part of its heat and light, and our earth and its satellite will at length approach it nearer and nearer, and ultimately will rush into the great darkened luminary; then utter indeed will be the ruin, and vast the outburst of light from the crash thereof. There is nothing chimerical, nothing unphilosophical in the belief or the expectation of this phenomena. But the time is not yet.

Now it may have been that the outburst of light in *T. Coronæ* may have arisen from the falling into it, first of a world like our own, and subsequently of its satellite. Such an hypothesis is somewhat consistent with the greater, and with the lesser outburst which succeeded the former. If the world in collision was provided with a great ocean like our own, then there is the source of the hydrogen; and if, as it cooled somewhat, it recombined with the oxygen, we can account for that peculiar blue tinge which Mr. Baxendell observed, and which blue tinge may be seen in perfection when the wind blows over and provides a supply of oxygen for an illumination by gas. Such a state of things would go far to explain the great variability in the colour of the star. The collision of an oceanless satellite would consistently account for the second and smaller outburst. But we are confessedly in the region of speculation, and there let us leave the subject, or at all events this truly hypothetical part of it.

In the course of this article we have been speaking of many things, in the contemplation of which it is difficult to silence the imagination, and sometimes equally so to suppress a rising emotion. What are we to say, for instance, of the evidence which such researches have brought to light, of that scattering of material substances in patches as it were throughout the universe, just as, in like patches, we find metallic substances scattered in various parts over our own earth? Some stars, we have seen, afford evidence of the existence of iron and lime, and others do not, most of those hitherto examined contain magnesium, and almost all of them sodium. Of gold, and of silver, so far, they contain not a trace, shall we here then repeat the remark which centuries ago Tacitus made regarding the ancient Germans:—"aurum et argentum, dii inani propitii negaverunt, dabit."

And lastly, there is another thought regarding this *Stella Mirabilis*, which we have already touched on, and with it we shall conclude. It has reference to the inconceivable distance of a body of whose material constitution we nevertheless make, and reasonably make, such confident assertions, and regarding a possible catastrophe in which we have ventured, though not without reserve, to speculate. The thought is this:—the conflagration in this atmosphere of a star was first observed on the 12th of May, 1866; but when did it actually occur? If this star is as near to this our world as is the nearest yet known of the stars, which proximity nevertheless we have no reason to suppose, then the increased outburst of the combustion of hydrogen must have taken place at least three years before it was visible at Tuam and interpreted at Tulse Hill. But if, as is far more probable, this star is among the more distant orbs which shine with a light so pale as to be visible only in our more powerful telescopes, then the conflagration, of which the first tidings have reached us only to-day, must have actually waxed and waned for its little week, not now, nor yesterday, but it may be even hundreds of years ago. The imagination shrinks within itself at the thought, how the bright light from that evanescent ephemeral outburst, winged its way, leaping century through century, from world to world, and telling successively the tale of its glory (it may be) to creatures nobler and more intelligent than ourselves, at length reaches the little speck of our mortal abode, in its course onward we know not whither. But let us remember it is not the prism, it is not the electric heat, it is not the telescope, which reveals these things to the initiated eye, but the knowledge comes to us through the dutiful appliance of that subtle irrepresible spirit in the human mind, which was breathed into man from the Spirit of the Eternal.

TEXT BOOKS IN LOWER CANADA.

As the resolution for the Council of Public Instruction for Lower Canada touching the books to be used in the public schools is to take effect on the 1st July next, we would again impress upon school corporations and all concerned, the importance of giving their earnest attention to this subject. This resolution passed on the 9th May last, fixed the 1st of July 1866, the day from and after which no other books than those authorized by the Council shall be used in the schools; however at a subsequent meeting of the Council, held on the 11th April 1866, the day on which the resolution shall take effect was postponed until the 1st July 1867.—*Journal of Education for Lower Canada.*

EDUCATIONAL INTELLIGENCE.

AT HOME.

(From the *British Colonist*.)

MARKED as the progress has been in all the branches of the public service during the past year, in none have the results been so striking as in the department of Public Education. Here the progress has certainly been extraordinary. The number of public schools in operation during the year was, for the winter term 207, and for the summer term 170, an increase of 144 and 181 respectively over the number of public and other schools in operation during the previous year. The number of pupils attending school was for the winter term 45,131, an increase of 9,980, or 28 per cent. over the number in 1865, in which year the number

* It is important here to observe that the less intensely heated vapours themselves emit some rays of the same quality or refrangibility as those which they have wholly absorbed; but these are so feeble as to appear dark when contrasted with the adjacent lights in the spectrum.

was larger by some thousands than it ever had been previously. In the summer term the number at the public schools was 56,017, an increase of 12,226, or 28 per cent. over the number in 1865; and an increase 18,471, or nearly 50 per cent. over the year 1864.

The proportion which the number of children at school bore to the whole population of the Province (census 1861) was for the winter term 1 in $7\frac{1}{2}$ as against 1 in $9\frac{1}{2}$ in 1865, and for the summer term 1 in $5\frac{1}{2}$, as against 1 in $7\frac{1}{2}$ in 1865. The counties having the largest number attending school in proportion to population, were for the winter term, Colchester 1 in $5\frac{1}{8}$, and Cumberland 1 in $5\frac{1}{8}$; for the summer term the same counties keep the lead, Colchester having one at school for every $4\frac{1}{2}$, and Cumberland one for every 5 of the population, according to the census of 1861. The most backward counties were for the winter term Queens and Guysborough; the first having not quite, and the latter a little better than, 1 in $11\frac{1}{2}$ of the population in attendance at school; for the summer term Queens was still considerably in the rear of the rest, having only 1 at school for every $9\frac{1}{2}$ of the population, but Guysborough came in with a very large increase, having one at school for every 7 of the population,—somewhat better than Halifax city, and nearly even with the county of Digby.

The whole number of different pupils attending school for some portion of the year was 71,059, or one in $4\frac{1}{2}$ of the whole population by the census of 1861; and 1 in $5\frac{1}{2}$ of the estimated present population of the Province—370,550.

The rapidity and thoroughness with which the system has been organized throughout the country is shown by the fact that of the whole number of teachers employed—929 in the winter term and 1130 in the summer term, none was without the license required by law; and another fact which illustrates the same point is that the largely increased number of schools were all managed according to law. In 1865 95 persons were employed in teaching during the winter term, and 82 in the summer term, without the required license; a large number of the schools were also, if we remember correctly, not conducted according to law. This change speaks volumes both for the wisdom of the law itself, and for the energy and readiness of the people in availing themselves of its provisions.

The amount paid as salaries of teachers during the year was as follows:—Raised by the people of the various sections \$83,227.76, —a decrease of \$39,415.24 as compared with 1865; assessed on the several counties as provided by law \$55,258.64; from the Provincial Grants for the year \$95,339.27, an increase of nearly \$30,000.00 as compared with 1865; total paid as salaries of teachers \$235,825.67, an increase of \$15,730.28 as compared with 1865. It will be seen that though the amount paid as salaries of teachers is largely in excess of the amount paid in 1865, yet the amount which the people of the various sections were called on to raise for this purpose was very much less than in 1865. This was partly the result of the large county assessment for schools, which did not exist in 1865, and largely the result of the increased liberality of the Government in sustaining the education of the country.

This increase in the salaries of the hitherto most poorly remunerated public servants in the country is one of the most gratifying phases of the changed position of education. It shows that when systematic and combined effort is brought to bear on the carrying on of any great public undertaking, instead of allowing it to fail or flourish at the whim of private individuals, the best available talent will be enlisted in the service, and the old truth, "the labourer is worthy of his hire" will be no longer ignored.

The total amount assessed by the people of the various sections during the year was \$176,252.07. Of this sum, as above stated, \$83,227.76 was paid to teachers. The amount paid for new buildings, repairs, &c., was \$68,885.71, for furniture and apparatus \$9,248.70, and for miscellaneous purposes \$12,889.90. The total amount paid from the Provincial Treasury, was \$136,821.37 during the school year, including a nominal expenditure of \$1663.86, the interest on the amount loaned for six months to the several Counties.

Besides the usual information, the Educational Report this year contains a large amount of highly interesting statistics never given heretofore. Tables showing the number of visits paid to the schools by the Trustees, by Members of Parliament, Clergymen and Commissioners, and other visitors; the state of the schools as regards classification, progress, &c.; the average dimensions of school-rooms in the several Counties; the condition of the school-houses as regards site, repair, ventilation, furniture, apparatus, &c. We are pleased to see that 662 schools have play-grounds attached, and that 41 school-rooms, of which 11 are in Yarmouth County, are furnished with patent desks, and 460 with the "Dawson" furniture, both of which patterns are approved. The results of the inspection of the schools are also shown in the number of Trustees and Teachers which remedied the defects pointed out by the Inspector. The period of service of teachers is also reported; the average is 4 years and 8 months; the number of new teachers registered during the year was 338, and of the whole number engaged 699, or considerably more than one-half, have been in the service less than three years. This fact clearly indicates that the change in the law has brought almost an entirely new and higher class of talent to the work of teaching.

The Report also embodies elaborate statistics of the several Colleges and special Academies receiving grants from the Treasury. These institutions appear to good advantage, and exhibit a high

degree of efficiency. The total number of Professors in the six Colleges is 29, besides 2 tutors, the number of Students in attendance for the year was 283. St. Mary's College had the largest number of all classes, while Acadia College had the largest number of Undergraduates. The total number of Students graduated with the degree of B. A. in course, in all the Colleges, is 373, of whom King's has 271 and Acadia College 87. In the special Academies there were 40 Instructors, and the number of pupils in attendance during the year was 1203. The number of students in attendance at the Provincial Normal School was, for the winter term, 77, of whom 46 received licenses at the close; and for the summer term 39, of whom 26 received licenses at the close.

The total expenditure in connection with public schools during the year was \$315,255.59, Colleges and Special Academies, \$46,316, Grand Total for Nova Scotia \$391,841.50 or considerably more than a dollar per head of the estimated present population, expended for educational purposes in 1866. We think there are few countries where the people as a whole manifest a higher appreciation of the value of education or greater liberality in supporting it. A large part of this expenditure is of course caused by past neglect. If the present movement had begun twenty years ago, we would now be occupying a higher position in regard to educational matters than we do, and the people would not be called on to pay such large sums of money in order to procure proper school-houses for their children. But the past is past, and Nova Scotia looks to the future. The results of the past year sufficiently indicate her determination in this matter. We doubt if anywhere in the world's history such astonishing progress has been made in so short a time. In two years, almost at a bound, the Province has risen, under the impulse of wise and well timed legislation, from being one of the most backward of countries in providing for the education of its people, to take, and we trust, permanently to occupy, a position which challenges comparison with even much older and wealthier countries.—*British Colonist*.

DARTMOUTH.—The half-yearly examinations of the six departments of the Dartmouth Public Schools, took place simultaneously at the close of the term. A large number of parents and friends of education were present. All seemed much pleased with the excellent appearance of each department. At the close of the examinations the pupils marched to the Mechanics' Institute. The hall was densely packed. Mr. Hollies, the Principal of the schools, gave an outline of what had been undertaken during the term, and what had been accomplished. Over 400 pupils were registered at the different departments. He also expressed his conviction that another term would witness "better fruit and more of it." Six prizes (one for each department) were then distributed by the donors. Each prize was awarded to the pupil out of the number of those who had not been absent or tardy a single day or half-day, except from extraordinary circumstances, whose behavior, diligence, and progress had been the most satisfactory. The Trustees having informed the assemblage that there were ten pupils who trod within a hair's breadth of the six successful ones, ten ladies and gentlemen immediately placed the sum of \$20 at the disposal of the trustees, in order that no injustice should be done to the ten who had contested the race so well. The Superintendent of Education then addressed the meeting, setting forth the blessings resulting from a comprehensive system of education, and commending the liberality and public spirit manifested by the people of Dartmouth in the cause of public education. His Honor Judge Johnstone expressed great satisfaction with what he had witnessed, and eloquently urged the vast importance of education to the people at large. He urged the children to value their privileges. All had not the same mental gifts, but all could attain to good behaviour, kindness and love. When his son brought home the teacher's weekly record, the first column inspected was "Department." He concluded his admirable address by expressing to the Trustees his desire to offer a prize for the next term. Alex. James, Esq., said that when the rate-payers of the section voted to erect a suitable school house, he felt that they had taken a step in the right direction. Public schools were a necessity among a free people. It was the duty of all to support them. He wished to say publicly that his children were never so desirous of going to school, that they never learned so much before, that the teachers were thoroughly in love with their work, and were most faithful and devoted public servants. The Trustees especially deserved the thanks of the people for the time and labor which they had given to the duties of their office. J. R. Miller, Esq., Inspector for the County of Halifax, referred to the contrast presented between the educational condition of the section now, and what it was nine years ago, when he taught school in Dartmouth. The contrast between last year and this was equally striking. He congratulated the trustees, teachers, pupils, and the people upon the change that had been effected. The exercises of the day closed by the pupils singing "God Save the Queen." Several persons who were present have signified to the Trustees a desire to offer prizes for future competition.

LOWER CANADA.—We learn that the schools of this section gave an evening exhibition at the close of the half-yearly examinations. The large school hall was well filled, many being present from Kentville, Wolfville, Canning, Upper Dyke, and other parts of the county. An admission fee of five cents furnished the Trustees with additional means for improving still further their school equipment. The exhibition came off exceedingly well. This school has just introduced the patent desks and chairs.

DIGNY CO.—Rev. P. J. Filluel writes: The state of education in this County is becoming more and more satisfactory. The people of Westport deserve special commendation for the educational spirit which they manifest; and fortunately they could not have a better representation of the excellence of the Normal School system, than they now have in the person of Mr. B. Harvey. It is satisfactory to know that the sections competing for the superior school honors, have put their houses in a very creditable state of repair, and they are now all well equipped with maps, globes, diagrams, &c. The blackboard surface in one school is 374 square feet, and this has been constructed with proper materials on the lathing. The Trustees are about to increase even this area.

CAPE BRETON COUNTY ACADEMY.—"C. H. II." in the *Cape Breton News*, gives the following account of the late examinations at the County Academy:—

The half yearly Examination of the several departments of the **SYDNEY ACADEMY** took place on the 25th, 26th, 29th and 30th ultimo.

The attendance of pupils at each of the Schools was good; 80 per cent. of the whole number enrolled were present,—while at the previous Examinations only 50 per cent. attended. A much larger number also, than usual, of the parents and friends of the children were present, evidencing an increased interest in the prosperity of Schools; and all the clergymen resident in town (with one exception) showed their interest by their attendance and addresses. It was very gratifying to have them exert their great influence in favor of our educational efforts, and we hope that in future they will aid the good work by more frequent visits to the schools. The law contemplates this, and, as a compensation, exempts them from sectional taxation on property under the value of \$2,000.

At the Primary School (taught by Miss Hill) out of 67 children on the register, 44 were present, notwithstanding the rain. The exercises were varied by recitations, and gave great satisfaction to the visitors present.

At the Intermediate Department (taught by Miss Harrington) 45 scholars attended out of 51. The neat appearance of the room, and the bright clean faces, and neat dresses of the little ones, made a very pleasing impression; while their earnestness in the exercises showed that their Teacher had succeeded in interesting them in their studies.

At the Preparatory Department (taught by Mr. Morrison), out of 36 scholars, 26 attended. A very great improvement was visible in this school, and the pleasure of the many visitors was very much enhanced by some very good singing by the young Misses.

At the High School (taught by Mr. Creel), 21 pupils were present—only two being absent. The improvement in this Department was more marked, perhaps, than in any of the others.

Classes were examined in Geography, British North American and General History, Reading, Grammatical Analysis, Arithmetic—date and mental, Geometry—(as far as the 6th book of Euclid,) Algebra, Mensuration, French, Latin, Greek, &c.

Several original essays of great excellence were read, and an amusing Dramatic Dialogue was spoken in capital style by five or six of the boys.

Revids. Dr. McLeod, Dr. Uniacke, J. Quinan, P. Prestwood, and W. B. Rogers, gave addresses, and expressed their gratification at the proficiency manifested by the pupils in the various branches studied, and the good order and attention to the work in hand.

It must be evident to every person present at the examination, that the schools are now established on a good basis, and that under the present Educational Act, and with the competent, earnest, painstaking Teachers now in charge of our schools, we have before us a bright educational future. Most of the difficulties incident to the inauguration of a new system, involving such radical changes, have been surmounted, and the vast improvement of the past term is but the earnest of still greater and more pleasing progress.

A FEW YEARS AGO some forty children were crowded into a private room, with no adequate ventilation, and about 60 cubic feet of air for each scholar. Now, 190 children have four large, well-finished, well-lighted, and well-ventilated school-rooms, furnished with the very best patent desks and seats, and about 160 cubic feet of pure air for each. "Look on this picture, and then on that," and if we value the COMFORT and HEALTH of the youth of our town; if we wish them to be intelligent, well-informed and well behaved members of society—fitted to take our places, as one after another of us is called away from the scene of action; if we desire our town to increase in refinement, wealth, and respectability; let us throw no obstacle in the way of the present admirable school system,—but rather let us try who can do most to develop its excellences, and to derive from it these great educational, moral and material benefits which it is so well calculated to bestow upon those communities which give it a fair and honest trial.

DALHOUSIE COLLEGE.—The *Presbyterian Witness* gives the following interesting account of the closing examinations in connection with Dalhousie College:—

The Session of 1866—7 of Dalhousie College, was publicly closed on Wednesday, in the presence of a very large and influential gathering of citizens and others. Among those present we observed His Excellency the Lieutenant-Governor, the Chief Justice, the

Provincial Secretary, Hon. Mr. Shannon, Dr. Avery, Hon. Mr. Holmes, John Tobin, Esq., M. P. P., Rev. R. Sedgewick, Rev. Dr. King, Rev. Dr. Bayne, Rev. P. G. McGregor, Rev. Canon Cochran, Rev. W. Maxwell, Rev. G. M. Grant, Rev. Thomas Sedgewick, &c. After prayer by Principal Ross, a statement of the labours of the session was read by Professor McDonald. Prizes were awarded as follows:—*Fourth year*,—Classics, A. Ross, Roger's Hill, Pictou; Chemistry, *the same*; History and Modern Languages, Aubrey Lippencot, New Glasgow; Ethics, John H. MacDonald, Cornwallis. *Third year*,—Metaphysics, Thomas Christie, Yarmouth; Classics, Jas. Creighton, Halifax. *Second year*,—Logic, E. Miller; Classics, *the same*. *First year*,—Rhetoric, J. Silver, Halifax; Classics, *the same*; Mathematics, Mr. Lindsay, Pictou; second prize, H. Scott. The Chief Justice's First Prize, \$25, for general good conduct, was awarded by his fellow-students of the third and fourth years to Mr. John Gow; and the second Prize, \$15, was awarded by the students of the first and second years to Mr. A. C. McKenzie; Rev. G. M. Grant's Prize of \$20 for the best Essay on the Genius of the Roman People, was awarded to Mr. Aubrey Lippencot.

The degree of Bachelor of Arts was conferred, with the usual interesting ceremonial, on the following students, Messrs. Joshua Burgess, Alexander Ross, Aubrey Lippencot, J. J. Cameron, John H. MacDonald, Saml. McNaughton, Edwin Smith, David Smith, and Robert Sedgewick. Professor Macdonald addressed the graduates briefly in Latin. The Principal also addressed them in the same language, and also in English.

The students and the audience were then addressed by Dr. Tupper and the Chief Justice, with their usual eloquence and good taste. Dr. Tupper referred in strong terms to the utter worthlessness of wealth except as a means of doing good, and justly characterized the pursuit of wealth merely for its own sake as degrading and injurious. He expatiated on the career that is now open to the able and educated young men of Nova Scotia. The Chief Justice dwelt with much earnestness on the duty of continuing their studies after leaving College. Stewart Campbell, Esq., M. P. P., and John Tobin, Esq., M. P. P., were each called upon, and spoke each in his happiest vein. Rev. G. M. Grant (who is a Governor of the Institution and most assiduous in his efforts to promote its interests) made an earnest appeal for funds to secure a Library for the College. He said he had already the offer of \$100 from two men. He would, if authorized and enabled to do so, exert himself during his proposed visit to Britain to secure books on the best terms. Mr. Tobin very generously subscribed \$200 on the spot. Mr. E. Boyd offered \$25. Mr. Sinclair \$100. Dr. Tupper \$100. His Excellency the Lieutenant-Governor then addressed the students and the audience in a very felicitous style. We regret that thousands were not present to hear and profit by the admirable advice which he tendered. He urged parents in Halifax to send their boys to this College instead of allowing them to saunter idly in the streets. He was sure that if they were trained here they would not be found on the Sabbath standing at the corners smoking cigars and staring under ladies' bonnets. He would remind the wealthy men around him, and especially members of the Legislature, of the Scripture truth, that he that giveth to the poor lendeth to the Lord; and it is equally true that he that gives or votes money for education lends it to the Lord. His Excellency again and again urged on parents in Halifax the duty of availing themselves largely of the advantages offered by this institution. He then said he was sorry he should have to "extinguish" his good friend Mr. Tobin, but he *could* do so, and gave \$400 towards the Library. Mr. Tobin quietly rejoined, "I only hope your Excellency will extinguish me three times over." Other gentlemen subsequently put down their names for handsome sums, and we have no doubt that a fair beginning will now be made towards securing a College Library.

This closing of Dalhousie was on the whole the most pleasant meeting we have yet seen in connection with the institution. The only drawback was the overcrowded state of the room. In future the closing ceremonial must take place in some large Hall. Professors and Students and Governors, and the Governor, all appeared to the best advantage. In giving the Prizes to the successful competitors, some of the Professors gave short addresses. Dr. Lyall's addresses to the students who won the prizes in his classes were exquisite.

"DOMINION" PRIZES.—J. S. Archibald, of Halifax, N. S., received the Prince of Wales Gold Medal, and C. C. Stewart, of Musquodoboit, N. S., the Sir William Logan Gold Medal, at the late competition of the graduating class of McGill College, Montreal.

SCHOOL PROVISIONS OF THE ACT OF CONFEDERATION.—The following are the provisions having reference to Education in the Act for the confederation of the British North American Provinces:

93 Section. In and for each Province the Legislature may exclusively make laws in relation to education, subject and according to the following provisions:

1 Nothing in any such law shall prejudicially affect any right or privilege with respect to Denominational Schools which any class of persons have by law in the Province at the Union.

2 All the powers, privileges, and duties at the Union by law

conferred and imposed in Upper Canada, on the Separate Schools and School Trustees of the Queen's Roman Catholic subjects, shall be and the same are hereby extended to the Dissident Schools of the Queen's Protestant and Roman Catholic subjects in Quebec.

3. Where in any Province a system of Separate or Dissident Schools exists by law at the Union or is thereafter established by the Legislature of the Province, an appeal shall lie to the Governor General in Council from any Act or decision of any Provincial Authority affecting any right or privilege of the Protestant or Roman Catholic minority of the Queen's subjects in relation to education.

4. In case any such Provincial Law as from time to time seems to the Governor General in Council requisite for the due execution of the provision of this section is not made, or in case any decision of the Governor General in Council or any appeal under this section is not duly executed by the proper Provincial Authority in that behalf, then and in every such case, and as far only as the circumstances of each case require, the Parliament of Canada may make remedial laws for the due execution of the provisions of this section and of any decision of the Governor General in Council under this section.

ABROAD.

UNITED STATES.—The bill establishing a National Bureau of Education, recently passed, provides for the appointment of a Commissioner and three assistants, whose duty it shall be to collect and diffuse information on the subject of Education, and to report annually to Congress such statements and recommendations as may be of value to the country, beginning with a history of the various land grants made by Congress for the promotion of Education.—Hon. Henry Barnard has been appointed Commissioner, and has resigned his position as president of St. John's College, Annapolis, Md., to give his whole attention to the duties of his new office.—Mr. Barnard has been identified with educational interests for many years, and has had every opportunity for acquiring experience and information.

At a late meeting of the trustees of the Peabody Educational Fund, the chairman, Mr. R. C. Windrop, announced that he had received from Mr. Peabody bonds covering the whole of the gift. The leading design of the Board in the use of the funds, will be the promotion of primary or common school education, by such means as now exist or may need to be created. To this end the training of teachers will be encouraged by the endowment of scholarships in existing Southern institutions, by the establishing of Normal Schools, and by aiding such normal schools as are now in operation in the Southern and Southwestern States. The promotion of education in the application of science to industrial pursuits, will also receive their attention. Rev. Dr. Barnas Sears, then President of Brown University, was nominated General Agent, to have, under the supervision of the Board, the entire charge of carrying out the designs of Mr. Peabody. He has accepted the appointment, and has severed his connection with the university, to enter upon the work. A donation of 100,000 elementary school books, offered to the trustees by Messrs. Appleton & Co., was promptly accepted. Messrs. Appleton & Co. are to be congratulated on their success in one of the shrewdest business bargains of the day. **MAINE.**—The trustees of the Agricultural College have selected a farm of 375 acres on the Penobscot, near Bangor, have procured live stock, begun some experiments, established a brick-yard, and purchased building materials. They propose to erect four buildings for college purposes, and ten cottages for the faculty and students, wisely discarding the antiquated system of commons and four-story dormitories, which are particularly ill adapted to the requirements of agricultural schools. **NEW YORK.**—The Assembly has passed the act abolishing the Rate Bill, and making all schools in the State, except those in cities and villages, free. The school tax is raised from $\frac{1}{2}$ to $\frac{1}{4}$ of a mill. The bill met with no opposition, though it was defeated last year.—The Fifteenth Annual Report of the New York Juvenile Asylum shows the operations of that institution, for the past year, to have been extensive, and its influence salutary. The Asylum is designed as a home and reform-school for vicious boys and girls, as well as a refuge for uncared-for children. Children between the ages of seven and fourteen years are received at the House of Reception, where they are detained six or eight weeks before being sent to the Asylum. The number of children in the House of Reception on the 1st January, 1866, was 92, the number committed and surrendered during the year, 853, and the number received from the Asylum, 52. The whole number in the House during the year was 997, and the average 117. The number of children in the Asylum on the 1st January, 1867, was 453, the number admitted from the House of Reception, 643, and the number returned from the House, 52. The whole number during the year was 1,143, the average 470, the greatest number at any one time 486, and the lowest number 444. The number remaining on the 31st of Dec., 1866, was 464.—The Society for the Reformation of Juvenile Delinquents has just issued its forty-second Annual Report. On Jan. 1, 1866, there were 339 children in the House of Refuge; 892 were received, and 860 were discharged during the year; 971 remained in the House on 1st Jan. 1867. The expenses for the year were \$119,591.64, and the re-

ceipts \$109,783, a deficiency of \$9,808.64.—The Medical Department of the University of New York City has suffered little from the burning of its building. Its connection with the New York Hospital is likely to be permanent. **PENNSYLVANIA.**—The bill taking from the School Directors of Philadelphia the power to elect the School Controllers, and vesting it in the Courts, has become a law. **ILLINOIS.**—During 1866, \$4,359,238 were expended against \$3,193,636 in 1865. The highest monthly salary to male teachers was \$240, to females, \$110; the lowest to males \$13, to females \$6. The number of school districts is 9,938, of which 502 had no schools in 1866. The number of male pupils is 320,377, of females, 293,682; number of teachers, 17,279; number of school-houses, 9,753, of which 612 were erected during 1866. The biennial report of Superintendent Bateman is elaborate and out-spoken. In ability it is second only to those of the Superintendent of Education in California. **MINNESOTA.**—The office of Superintendent of Public Instruction, created by the last Legislature, has just been filled, by the appointment of the Hon. Mark H. Dummell, of Winona. **TENNESSEE.**—Under the new school law, the State is divided into about 7,000 sub-districts corresponding to single school districts in a country town of the North. There are 1,700 so-called civil districts, containing on an average four sub-districts. The law requires that the voters in the sub-districts shall choose three directors. One of these is to act as clerk, and the clerks of the several sub-districts in a civil district, constitute the Board of Education. The scholastic population of the State is about 400,000; the available funds for the first year will be about \$530,000. **SOUTH CAROLINA.**—The University of South Carolina consists of ten distinct and independent schools, into any three of which pupils are admitted without being required to take instruction in the other departments. The Schools of Law and Medicine are not yet organized. **FREEDMEN'S SCHOOLS.**—From the Report of Colored Schools in the Department of Washington for the month of February, 1867, it appears that the number of day and night schools in the District of Columbia is 90; number of teachers, white, 129; colored, 13; number of scholars, 4,822. In Alexandria City and County and Fairfax County, Va., the number of schools is 26; teachers, white, 29; colored, 6; scholars, 1,756. There are reported from Maryland six schools and 290 scholars. There are in the District of Columbia, but not regularly reported, seven schools and 460 scholars. Total schools, 129; teachers, 191; scholars, 7,328.

GREAT BRITAIN.—In the House of Commons, March 12th, Mr. Ewart asked leave to introduce a bill to open the benefits of an education in the Universities to students without obliging them to be members of a college or hall, basing his motion on the example of foreign and Scotch Universities, and on the importance of diminishing the expense of university education. Mr. Beresford Hope objected to the scheme, but Sir William Heathcote, one of the members for the University of Oxford, said that the authorities at Oxford were now deliberating on the practicality of a scheme of this sort. Leave was given to bring in the bill.—On the 6th of February, in the same House, Mr. Lawson moved a measure to enable persons to enjoy the advantages of the schools of anatomy, botany, chemistry, and medicine, in Trinity College, Dublin, irrespective of religious opinions.—An influential meeting has been held in Edinburgh for the purpose of memorializing the Government in behalf of increased endowments for the Scotch Universities, and especially for the University of Edinburgh.—At the last Quarter Sessions for Surrey, the Chairman attributed the marked diminution of crime chiefly to the establishment of successful reformatory institutions. He said that 80 per cent. of the lads committed to these institutions came out well and prosperous; only a very few relapsed into their old habits.—In Ireland there are 6,370 schools; a daily attendance of 320,000 pupils, and 900,000 names upon the books. There are besides, nine reformatory schools.

FRANCE.—An Educational Society, embracing the whole nation, is likely to be formed, unless the Government forbid. The subscription lists are well filled. The society has for its object the advancement or popular instruction.

SPAIN.—Out of 72,157 Municipal Councillors in Spain, 12,479 are unable to read or write.—Among the number are included 422 Mayors, and 938 Deputy Mayors.

HINDOSTAN.—Bengal has 2,237 schools, with 103,000 pupils; there are besides 6,000 pupils in private schools. In Madras there are 1,000 schools, with 39,000 pupils. The number of girls' schools has greatly increased.

CHINA.—The *China Overland Mail*, of February 1st, says that the establishment of a college under the foreign professors who have come out with Mr. Hart, is looked upon with great interest, and it is generally believed, both among natives and Europeans, to be likely to have a very beneficial influence. The chief difficulty will consist in getting professors acquainted with the language, those who have come out being mostly beyond the age when a language so difficult as Chinese can be acquired. It is, however, hoped that the student interpreters in the service of the Customs will render much assistance in this respect, and that in the course of time the institution may be set into good working order.—*Educational Monthly*.

Extracts from the Regulations of Council of Public Instruction.—“Before being enrolled a Student at the Normal School, every pupil-teacher shall make the following declaration, and subscribe his or her name thereto. *I hereby declare that my object in attending the Provincial Normal School, is to qualify myself for the business of teaching, and that my intention is to teach, for a period not less than three years, in the Province of Nova Scotia, —if adjudged a Certificate by the Examiners.*” In consideration of this declaration, instruction, stationery, and the use of text books (except Classical) shall be furnished pupil-teachers, free of charge.”

“Candidates for admission to the Normal School shall attend one of the regular semi-annual examinations conducted by the District Examiners in October and April in each year, and if they pass a satisfactory examination on the third-class syllabus, they shall, if found worthy of the same, receive a certificate of character, ability, and scholarship. This certificate shall give the holder admission to the Normal School, and upon presenting said certificate to the Superintendent, the holder shall receive an allowance of five cents per mile, towards travelling expenses. In the case of those who hold licenses, granted since October, 1864, it shall be sufficient to make application to the Chairman of the District Examiners, who shall forward the requisite certificates to applicants. No person shall be admitted to this Institution as a pupil-teacher, without the above-named certificate.

Persons wishing to enrol as Candidates for High School or Academy certificates must, in addition to a good knowledge of English, be thoroughly familiar with the Latin and Greek Grammars, and be able to parse with ease any passage in some elementary work in each language. In mathematics, they must be competent to solve any example in the advanced Nova Scotia Arithmetic, to work quadratic equations in Algebra, and to demonstrate any proposition in the first four books of Euclid.”

“If qualified, they may be examined on the second, or first-class syllabus, omitting the practical questions at the end.”

IX. Bond of Secretary to Trustees.

“The Secretary of the Trustees shall give a bond to Her Majesty, with two sureties, in a sum at least equal to that to be raised by the section during the year, for the faithful performance of the duties of his office; and the same shall be lodged by the Trustees with the Clerk of the Peace for the county or district.”—*School Law of 1866, Sect. 42.*

This bond is to be given annually, or whenever a Secretary is appointed, and Trustees should not fail to forward it by mail or otherwise, to the Clerk of the Peace, immediately after they have appointed their Secretary. The following is a proper form of bond:—

PROVINCE OF NOVA SCOTIA.

KNOW ALL MEN BY THESE PRESENTS, THAT WE, (name of Secretary) as principal, and (names of sureties) as sureties, are held and firmly bound unto our Sovereign Lady VICTORIA, by the Grace of God, of the United Kingdom of Great Britain and Ireland, Queen, &c., in the sum of _____ of lawful money of Nova Scotia, to be paid to our said Lady the Queen, her heirs and successors, for the true payment whereof, we bind ourselves, and each of us by himself, for the whole and every part thereof, and the heirs, executors and administrators of us and each of us, firmly by these presents, sealed with our Seals, and dated this _____ day of _____ in the year of our Lord one thousand eight hundred and _____ and in the _____ year of Her Majesty's reign.

WHEREAS the said _____ has this day been duly appointed to be Secretary to the Board of Trustees of _____ School Section, No. _____ in the District of _____

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, That if the said (name of Secretary) do and shall from time to time, and at all times hereafter, during his continuance in the said Office, well and faithfully perform all such acts and duties as do or may hereafter appertain to the said Office, by virtue of any Law of this Province, in relation to the said Office of Secretary to Trustees, and shall in all respects conform to and observe all such rules, orders and regulations as now are or may be from time to time established for or in respect of the said Office, and shall well and faithfully keep all such accounts, books, and papers, as are or may be required to be kept by him in his said Office, and shall in all respects well and faithfully perform and execute the duties of the said Office; and if on ceasing to hold the said Office, he shall forthwith, on demand, hand over to the Trustees of the said School Section, or to his successor in office, all books, papers, moneys, accounts, and other property in his possession by virtue of his said Office of Secretary—then the said obligation to be void—otherwise to be and continue in full force and virtue.

Signed, sealed, and delivered } [Name of Secretary.] (Seal)
in the presence of } [Names of Sureties.] (Seals)
[Name of Witness.]

WE, THE SUBSCRIBERS, two of Her Majesty's Justices of the Peace for the County of _____ do certify our approbation of _____ (names of Sureties,) within named, as Sureties for the within named _____ (name of Secretary,) and that they are to the best of our knowledge and belief persons of estate and property within the said County of _____ and of good character and credit, and sufficiently able to pay, if required, the penalty of the within bond. Given under our hands this _____ day of _____ A. D. 186 _____ [Names of Magistrates.]

X. List of Inspectors.

- J. R. Miller.....Halifax.
- Rev. D. M. Welton, M.A.....Windsor.
- William Eaton.....Kentville.
- Rev. G. Armstrong, M.A.....Bridgetown.
- Rev. P. J. Filloul, B.A.....Weymouth.
- G. J. Farish, M.D.....Yarmouth.
- Rev. G. M. Clark.....Shelburne.
- Rev. D. O. Parker.....Arbordale, Queens Co.
- W. M. B. Lawson.....Lunenburg.
- H. C. Upham.....Great Village.
- Rev. James Christie.....Amherst.
- M. T. Smith.....Pictou.
- Rodk. McDonald.....Antigonish.
- S. R. Russell.....Guysboro'.
- James Macdonell.....Port Hood.
- C. R. Macdonald.....Baddeck.
- Edmund Outram, M.A.....Sydney.
- W. R. Cutler.....Arlivat.

ADVERTISEMENTS.

To Trustees and Teachers in Halifax Co.

The Inspector of Schools for Halifax County will be in the Legislative Library room, Province Building, between the hours of 11 A.M., and 1 P.M. from the 27th of May to the end of the month, for the purpose of distributing to Trustees their cheques on the County Treasurer, and paying Teachers their provincial allowance. No cheques or moneys will be delivered, except to the parties to whom they belong, or on their written orders.

J. R. MILLER.

To Trustees and Teachers.

COLCHESTER COUNTY.

Teachers and Trustees are notified that I shall pay their several dues from the Provincial Grant and County Assessment, at my office, Truro, on THURSDAY, May 23, at 10, A. M., and at Mr. Purves', Tatamagouche, on TUESDAY, May 28, at 10, A. M.

As only one day in each place can be devoted to this work, much trouble will be saved by strict attention to this notice.

H. C. UPHAM.

To Trustees and Teachers.

PICTOU COUNTY.

Trustees and Teachers will be paid the half-yearly Provincial and County Assessment Grants, for South Pictou, at New Glasgow, on 22nd May; for North Pictou, at Pictou Town, on 25th May, 1867.

Books for School Teachers.

COMMON SCHOOL EDUCATION, By Currie.

EARLY AND INFANT SCHOOL EDUCATION, By Currie.

For sale by

A. & W. MACKINLAY.

Morton's Magazine Library.

NO FINES—NO TIME LIMITS—TERMS MADE KNOWN ON APPLICATION.

By all who become subscribers, the new Magazines or Volumes may be obtained on the arrival of mail steamers, and returned or exchanged during business hours, until 9 p. m. daily. The following publications are among the Books and Magazines on the shelves:—

- Argosy Magazine,
- All the Year Round,
- Atlantic Monthly,
- Arthur's Home Magazine,
- Blackwood's Magazine,
- Boys' Monthly Magazine,
- Bow Bells, volumes and parts,
- Chambers' Edinburgh Journal,
- Christian Work Magazine,
- Christian World,
- Cassell's Family Paper,
- Churchman's Magazine,
- Cornhill Magazine,
- Englishman's Magazine,
- Englishwoman's do.
- Family Treasury,
- Good Words, volumes and parts,
- Godey's Book,
- Harper's Magazine,
- Hours at Home,
- Ladies Treasury,

- Leisure Hour,
- London Reader,
- London Journal,
- London Society,
- Monthly Magazine,
- Mellior's do.
- Once a Week, volumes and parts,
- Our Young Folks Magazine,
- Penny Readings,
- Quiver, volumes and parts,
- Sunday at Home, volumes and parts,
- Saint James' Magazine,
- Sixpenny Magazine,
- Sunday Magazine (Guthries),
- Supplementary London Journal,
- Temple Bar Magazine,
- Working Man's Journal,
- Young Englishwoman's Magazine,
- Young Lady's Journal,
- And all other Monthlies as issued.

Address, G. E. MORTON & CO.,
Book and Medical Warehouse,
South of the Province Building, Halifax.

The Journal of Education,

Published monthly, under authority of Act of Parliament, and furnished gratuitously to Trustee-Corporations, and to Teachers as specified in Sect. 6 (15) of the law concerning public schools.

Any person not entitled to a copy free of charge, will have the Journal sent to his address on payment of \$1.00 per annum, in advance. The Inspectors in the several Counties are authorized to receive subscriptions.

The number of copies required for distribution to Trustee-Corporations and to Teachers entitled to receive them, will be forwarded to the Inspectors. Subscribers will receive their copies direct from Halifax.

Trustees will file and preserve this Journal as the property of the section they represent, to be handed over to their successors in office. Each number should be properly stitched and cut open before being read.

Teachers wishing situations will have the privilege of inserting a brief advertisement (class of license, experience, references, salary, and address,) for one month, free of charge. Trustees in want of teachers will be allowed a similar privilege.

A limited number of advertisements in connection with education and kindred subjects, will be inserted at 20 cents a line for the first and 10 cents a line for each subsequent insertion.

Communications to be addressed EDUCATION OFFICE, HALIFAX, N.S.