Technical and Bibliographic Notes / Notes techniques et bibliographiques

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

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

- [x] Coloured covers / Couverture de couleur
- [ ] Covers damaged / Couverture endommagée
- [ ] Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- [ ] Cover title missing / Le titre de couverture manque
- [ ] Coloured maps / Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- [ ] Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- [x] Bound with other material / Relié avec d'autres documents
- [ ] Only edition available / Seule édition disponible
- [x] Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.

- [x] Coloured pages / Pages de couleur
- [ ] Pages damaged / Pages endommagées
- [ ] Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached / Pages détachées
- [x] Showthrough / Transparence
- [x] Quality of print varies / Qualité inégale de l'impression
- [ ] Includes supplementary materials / Comprend du matériel supplémentaire
- [ ] Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from scanning / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été numérisées.

- [x] Additional comments / Commentaires supplémentaires: Continuous pagination.

THE

JOURNAL OF EDUCATION

Devoted to Education, Literature, Science, and the Arts.

Volume XIV. **Quebec, Province of Quebec, October, 1870.** **No. 10.**

TABLE OF CONTENTS.

On Teaching Natural Sience in Schools.

BY J. M. WILSON, M. A., F. G. S., F. R. A. S.

(Continued from our last.)

Moreover, the kind of knowledge that science offers is not only wide, and interesting, and elevating, but it is also exact; and this exactness is a very great merit. It is a knowledge of things, and not of words. In the education of the upper classes there is too little of positive and exact knowledge, and too much of mere training and drill: we have too much distrusted the virtue of knowledge. In a purely classical education there is something of the *bellè et probabiliter opinari* as opposed to the *certò et ostensivè scire* of Bacon. For the ultimate conceptions of grammar are by their nature only to be attained by self-analysis and metaphysical introspection; and though boys sometimes attain great knowledge of usage, yet it is empirical and not demonstrative. And natural science supplies this want of clearness and certitude better than arithmetic or geometry: its exactness amid its diversity serves as a kind of standard in the mind of what knowledge is. Arithmetic, geometry, and natural science represent positive knowledge in a boy's education; they have the 'know how' and the 'know why," and this gives confidence and certainty.

But there is another and even a stronger ground for advocating the introduction of science as an element in all liberal education, and that is, its peculiar merit as a means of educating the mind. Science is not only knowledge, but it is also power. The mind is not only an instrument for advancing science, but, what is more to our present point, science is an instrument for advancing the mind. All that can be said of this point has been said over and over again, and I can contribute nothing except my daily experience that what is said is true. Mill speaks of "the indispensable necessity of scientific instruction, for it is recommended by every consideration which pleads for any high order of intellectual education at all." Science is the best teacher of accurate, acute, and exhaustive observation of what is; it encourages the habit of mind which will rest on nothing but what is true; truth is the ultimate and only object, and there is the ever-recurring appeal to facts as the test of truth. And it is an excellent exercise of memory: not the verbal, formal memory, but the orderly, intelligent, connected, accurate storing up of knowledge. And of all processes of reasoning it stands alone as the exhaustive illustration. It is pre-eminently the study that illustrates the art of thinking. "The processes by which truth attained," to quote again from Mill, "reasoning and observation, have been carried to their greatest known perfection in the physical sciences." In fact, the investigations and reasoning of science, advancing as it does from the study of simple phenomena to the analysis of complicated actions, form a model of precisely the kind of mental work which is the business of every man, from his cradle to his grave; and reasoning, like other arts, is best learnt by pratice and familiarity with the highest models. Science teaches what the power and what the weakness of the senses is; what evidence is, and what proof is. There is no characteristic of an educated man so marked as his power of judging of evidence and proof. The precautions that are taken against misinterpretation of what is called the evidence of the senses, and tracing the thoughts backward down to the ground of belief; the constant verification of theories; the candid suspension of judgment where evidence is still wanting; that wedding of induction and deduction into a happy unity and completeness of proof, the mixture of observation and ratiocination—are precisely the mental processes which all men have to go through somehow or other in their daily business, and which every human being who is capable of forming an intelligent opinion on the subject sees

would be better done if men had familiarised themselves with the models of these process which are furnished by sciences. I do not mean that a boy knows he is doing all these these things; but he is doing them visibly. And when he applies the analysis of logic to the processes of his mind, he will find that he has been thinking logically, though unconsciously so.

Thinking is learnt by thinking; and it is my strongest conviction, as it is my daily experience, that boys can and do learn to think,—learn all the varied operations of the mind we sum up in that word,—by the study of science. A more vigorous school of thought, and a habit of the mind less inclined to the faults of dogmatism on the one side, and deference to authority on the other, with more reverence for truth, and more confidence in knowledge, is the natural product of scientific instruction.

And again, how perfectly does science illustrate what the attitude of the mind ought to be towards the unknown and unrevealed. It shows the methodical advance and conquest of knowledge over ignorance, and marks where there is uncertainty on the border ground between them; it exercises its judgment on the degree of uncertainty, and casts longing looks into the darkness beyond. But it never mistakes the penumbra of uncertainty for the full light of demonstration.

Moreover, taking education in its broad sense as the training of all the powers that go to make up the man, I would point out how much science contributes towards increasing the powers of the senses. All science is based, some one has said, on the fact that we have great curiosity, and very weak eyes; and science gives men a marvellous extension of the power and range of the acuteness of those eyes. "Eyes and no eyes" is the title of an old story; and it scarcely seems too strong a way of marking the difference between the powers of perception of a cultivated naturalist, and those of the ordinary gentleman ignorant of everything in nature. To the one the stars of heaven, and the stones on earth, the forms of the hills, and the flowers in the hedges, are a constant source of that great and peculiar pleasure derived from intelligence. And day by day do I see how boys increase their range of sight, and that not only of the things we teach them to see, but they outrun us, and discover for themselves. And the power, once gained, can never be lost. I know many instances of boys whose eyes were opened at school by the ordinary natural science lectures, who have since found great pleasure and constant occupation in some branch of scientific study.

And I would add that whatever may be defects of a purely literary education, which I obviously do not intend to discuss, they cannot be remedied by mathematics alone. Mathematics are so often thought, by those who are ignorant of them, to be the key to all reasoning, and to be the perfection of training, and so often spoken of by proficients in them as mysteries that it is worth the labour of half a lifetime to understand, that it is worth while to remember that after all they are only compendious and very limited methods of applying deductive reasoning, assisted by symbols, to questions of which the data are, or are supposed to be, extremely precise. They no more *teach* reasoning in the ordinary sense of the word than travelling by railway fits a man for exploring in Central Africa. And hence, while I set a very high value on arithmetic and geometry in all education, it is not because they supply the place of science, however, and are indispensable to its study. (1)

It will be observed that in this sketch of the grounds on which I urge the claims of natural science to be admitted into the ordinary course of a school education, I have omitted some points which are obvious enough. There is for example the very great pratical utility of the knowledge; and if boys cannot gain enough knowledge at school to enable them to solve the scientific problems that may meet them in their later life, yet it is something to know that they are scientific problems. It is something, to know enough to know that others know more; to be able to say that this must be referred to a chemist, and this to a geologist.

And again, there is the very great increase of interest that an acquaintance with the elements of sciences gives to an educated man. An age of progress is an age of exceeding interest to those who can follow it intelligently.

And it seems only reasonable that schools should at least have the power of discovering special abilities.

And the presence of science side by side with literature is a protest against the narrowness which overvalues one branch of learning and despises others Co-operation is necessary to secure a happy co-existence of these studies. Each alone becomes conceited; and conceit is the most fatal enemy to progress.

The advance also of science depends to some extent on the number as well as the genius of its students. How many rare and precious fossils, how many singular phenomena have been lost to the world, seen by blind eyes! How many gas-lamps might have trembled at sounds before a Lecomte observed under what conditions the ball-room lights responded to the tones of a violoncello!

And the extent to which the methods of science have affected all other studies, the existence of social and economical *science*, and the relation of science to religious thought, make it absolutely necessary that it shall be no longer excluded from a liberal education.

The narrow range (to recapitulate) of our existing curriculum invites extension, and natural and physical science claims admission on all grounds that render intellectual education in itself desirable. The natural interest boys take in it, and the effort it consequently induces them to make, the dignity of the ideas it unfolds, and the exactness of the knowledge that it is built upon; its value in practice and in philosophy; the extension it gives to the range of intellectual perception and consequent intellectual pleasure; the truth-seeking habit of mind, and training for an intelligent contemplation of the world that it imparts; and above all the completeness of the illustrations and models of the art of thinking that it affords in a form that attracts and retains the attention, and almost unconsciously trains the student in habits of logical thought,—form a body of arguments that seem unanswerable for introducing science into our schools as a branch of liberal education.

There are several objections brought forward by those who think more or less on this matter, and they reduce themselves to three: which urge respectively the worthlessness, the inhumanity, and the discursiveness of the study of science.

All that may be said on the worthlessness of science as a means of education in schools is before the world in the evidence given by Dr. Moberly, of Winchester, before the Public Schools Commission: to which I refer the reader.

The inhumanity of science is urged by some who feel that in order to train men, education must deal mainly with the feelings, the history, the language of men; that our relation to men, past and present, is more intimate, more important, and more elevating than our relation to the objects and forces of nature. Granted; and it proves that an education in science alone would be not the highest; but it is really no argument against a proper and moderate use of science as a means of educating certain faculties, such as the logical, which are very important for a true study of men, and yet are not best trained by a study of language, and literature, and history. This, however, does not go to the bottom of the matter. Many have a kind of instinctive fear, not so much of the inhumanity, as of the inhumanising influence of science. And this instinct has, I believe, a real foundation. It is not simply false, that there is an inhumanity about science. The vague impression that reverence, faith, belief in the unseen and the spiritual, and in truths derived from

(1) It is singular that the Mathematical Tripos is so uncientific, and the Natural Science Tripos at Oxford so unmathematical. At Cambridge a man may get the highest honours in mathematics and natural philosophy and have never seen a crystal, a lens, an air pump, or a thermometer; and at Oxford a man may get his First in natural science without knowing the Binomial Theorem or the solution of a triangle. Surely these are mistakes.

individual consciousness, are diminished, as superstitions are diminished, by the school of science, must not be met by an off-hand denial that there is any foundation for it; for constant dealing with nature and exercise of the intellect alone, as contrasted with humanity and the exercise of the moral feelings, unquestionably tend to exclude men from the highest thoughts. All that may be said about the dignity of the study of erected things —and this is a truth that often needs to be enforceed—must not make its advocates lose sight of the relation of this study to others. The wish of many men of science that it should form the staple of liberal education, if gratified, would probably lead to a loss of gracefulness and unconscious art in style, which characterises nations which study the classics, and moreover would produce a peculiar and dangerous one-sidedness, which may be distinctly seen in many individual cases. In such cases, their constant study of one kind of evidence raises a secret disinclination and real inaptitude, for the time being, to accept evidence of a different kind, and induces them openly, or tacitly, to depreciate and distrust it. They are constantly tempted to consider the finer mental and religious sensibilitities as useless, and as if they proved nothing. They are facts, of course, but facts which verge on fancies; and they have acquired a distaste for this kind of reflection, and something of contempt for its value in others. They seem to have raised a wall between themselves and certain truths; to have dazzled their eyes by a study of the glaring truths of external nature, and to be for the time incapable of discerning the dimmer but nobler truths of the soul and its relations. They distrust what may not be referred to the mechanism of organization, and disbelieve that the reason alone can be the source of real truths. Yet all this does not tend to prove that science should be excluded from schools, but that it should not form the staple of our education.

Discursiveness is a real danger. To do one thing well does undeniably give the power of going on acquiring more knowledge, making it exact, and using it. And schools and universities must still aim at concentration and excellence if they are to turn out men of power. But this is not attained by an exclusive curriculum, but by a reasonably comprehensive and elastic one; by making it possible for more varied excellence to be attained. I hold that a boy is best educated by learning something: and that a man of the highest education ought to know something of everything, and everything of something. And to avoid the distraction and dissipation of mind which is the result if too many things are being learnt at once, will require some care on the part of those who arrange work at schools. Leizure must not be cut away. Nothing refined and artistic in the classics, nothing sound and progressive in mathematics, nothing masterly and philosophical in science is attainded in a system where there is much hurry and little leizure. Hence the curriculum must be made to some extent elastic: it is perfectly easy to make it so in any school; to make some studies compulsory and some optional, throughout the whole course; to make others compulsory at one period and alternative at another. And where this is done with judgment, no fear of disorganising the school and causing idleness need be entertained. This will readily be granted; but when it is urged that science ought to be one of the compulsory subjects, for at least a part of the period spent at schoool, then the claim is disputed. We cannot look on science as a *πάρεργον* which may serve serve for the amusement of those who fail to be scholars, but as a frivolous pursuit for men of abilility—the doctrine very generally held by classical scholars; on the contrary, we claim for it a position in the education of all on the ground of the advantages it possesses for this purpose. In a dialogue it is impossible to discuss this question; for sooner or later the classicist argues thus in fact; "Whatever the faults of an exclusively classical system may be, it turned me out as one of its results. Whatever the value of science, it is not indispensable, for a I am wholly ignorant of it." "My dear sir," one longs to say, "you are the very man in whose interests I am arguing. It is you who would be so much wiser, so very much less conceited, so much more conscious of the limitations of your knowledge, if you had been scientifically educated. You are far from stupid, and not uncultivated; but you lack what I consider of great value. When I speak of philology as a *science*, and of comparative philology as a *science*, you imperfectly understand me; and your depreciation of these studies (the whole nation depreciates them) results from your want of proper education. You would have more power in your own subjects, and an infinitely wider range of ideas and interests, if your classical education had been less unmitigated than it seems to have been." It is not enough therefore only to provide at schools means of learning something of science, as one might demand for the flute; but it must be made one of the compulsory subjects.

(*To be continued*).

Prize Essay on Teaching Elementary Geography. (1)

PREFACE.

The writer takes the "first lesson" on the map, as the mode in which the earlier instruction is to be given, the lesson on England for the more advanced stage. He has found considerable difference among *authorities* as to the spelling of foreign names.

He had intended to take up Ireland and Scotland in the same manner as England, but found that moderate space would not permit.

GEOGRAPHY.

The first instruction in geography is to make the pupil acquainted with the *technical terms;* such as, *sea*, *river*, *mountain*, *lake*, *city*, &c. This may be best done by directing attention to the topography of the locality where the pupil resides. The neighbouring mountain which he climbs, the river he fishes and bathes in, the place he or his relatives occasionally go for seabathing: these can be all made to furnish him with ideas,—afterwards to be *expanded*,—of the terms of geographical science. Terms learned in this way are not merely words; they bring ideas before the mind.

The cardinal points are pointed out during recreation at midday, as taught in the lesson-books, and fixed on the memory by requiring the direction of fields, villages, or other objects of interest, to be given—as lying north, south, east, or west of the school-house. The map, placed on north end of the school room, will show the real position of all places on its surface, corresponding to the directions learned outside. The climate of our own country in its various elements, of heat and cold, calm and storm, rain and drought, with the succession of the seasons; the height of the sun in summer and winter, and the corresponding heat or cold: all these may be passed in review and be taken advantage of in treating of similar or dissimilar phenomena.

Comparison.—The pupil's neighbourhood furnishes him with the chief elements from which landscapes are formed throughout the world. His ideas must be extended to take in the features of tracts of country very much larger than his own. His *imagination*, guided by his instructor, will enable him to put together combinations equal to the multiform appearances of nature. There may be no mountain worthy of the name in his view; but the hill side on which, perhaps, his father's cattle graze, and to whose top he sometimes climbs, will give him from a comparison of the number of times higher, some idea of a loftier peak, where cattle and houses are left below; and then by further

(1) Mr. Chamney, the spirited publisher of "The Irish Teachers' Journal," Dublin, some time ago offered prizes for Essays on the teaching of Arithmetic, Grammar and Geography in the Irish National Schools. Our Readers will remember, as we published the Essay, that the first prize was awarded to Mr. Thomas Cummings, Manorhamilton, for his Essay on Arithmetic—and he has been awarded the first prize again for his Essay on Geography, which we now reproduce from the columns of the above named journal.

expansion to the Alp with its head in eternal snow, the forest on its central parts, and the fertile valleys at its base. The stream which flows through the adjoining fields with its turnings, shoals, and pools, helps him to imagine the majestic flow of a mighty river, carrying ships, with the productions of many lands, on its bosom. On a hot summer's day he is led to realize the greater warmth of tropical lands, with their more luxurious vegetation, and numerous animal life. On a winter's day the frozen cheerless zone of ice, its dearth of life, vegetable, and animal. We shall finish this subject of comparison by a quotation from the *Minutes of Council*, 1847.

" The knowledge of geography which is best adapted to elementary schools, most likely to be understood by children, to interest them, to remain with them, to form the subject of future reflection, become a topic of continual interest, and a means of perpetuation of that process of education which is but commenced in childhood; consists in the knowledge of matters concerning other parts of the world which are familiar to the observation of the child in this part of the world."

The first or earliest instruction on the map, after making the pupil acquainted with the difference between land and water, includes the names of countries associated with their productions, animals, and so forth: Lapland with the reindeer, Africa with the lion, America with cotton, Jamaica with coffee, the Nile with the story of Moses. Exact position is not at this time the object of study; yet, we may begin to show the cardinal points the sides of the countries thus associated point to. Pictorial illustrations, which can be obtained cheaply from the National Board, will lend additional interest: such as pictures of the snowy peaks and glaciers of Switzerland, the prairies of America, the Arab and his camel, &c.

Second stage.—We use the map of the world from the commencement, for we do not agree with those theorists who lead children to the school-room maps through a long series of topographical expansions, commencing with the locality we reside in. We agree with the late Mr. Robinson in thinking, that the time so employed could be more usefully spent in the learning of foreign countries, and the more distant parts of our own; and that such a system requires a more painstaking course, and a more expensive machinery than is readily procurable. What we are in favour of is the use of the map of the world from the first lesson, and while learning to associate, as already shown, important and interesting facts with some of the continents and larger countries on its surface, the eye in gradually taking in the outlines and proportions of its divisions, day by day.

In order to learn intelligently, the pupil must conceive correctly, what a map is. The usual way described in geographies, is to make a *picture* of the school-room; then a *ground-plan* of it, or *map*; explaining that the map is taken from a bird's-eye view, that is from a point of observation at some distance above it. It may be remarked, that, when ascending a neighbouring hill, or looking from the top of any eminence, the fields appear to expand out below them, the hedges appearing like dark boundary lines; if an ascent still higher is made larger tracts become visible, the fences gradually disappear, and the larger features of the landscape take their place: the rivers are seen to roll on to the sea, the hills appear bright on top and shaded at the sides, as depicted on the maps, and the outlines of coast appear in the distance, with a waste line of beach and shingle bounding it. The further we yet ascend the smaller the whole view becomes, and neighbouring islands, and tracings of distant countries, come into sight. The views from the *various heights*, explain what sometimes puzzles a child, the different sizes of Ireland on one map, and then on another. The imagination may thus at length be led to see the earth at a great distance, with its tracery of continents, islands, mountains, volcanoes, and the regions of white everlasting snow, around its poles.

Familiar proofs may now be given of the earth's rotundity. Next the land on its surface as consisting of continents, their sizes as compared one with the other, their subdivisions in order, and their natural features, length of coast line, mountains, rivers, plains, deserts, lakes. Of the oceans: in regard to seas, gulfs, bays, &c. Of heat and cold over the earth, day and night, winds, currents, tides; productions; animal life; occupations of inhabitants, character, habits. Some of these subjects will require a separate lesson, as is provided in the sequel, such as that on temperature, to enable the pupil to grasp the general principles on which the distribution of heat depends: afterwards the general laws are applied in the particular instance under consideration, with the modifying circumstances.

The teacher tries to make the map suggest nature itself; he relieves the dryness of names, dimensions, and relative position, with a largely descriptive element; and in every stage compares the unseen with the seen.

If the pupil leaves school at this stage he will, if attentive, have acquired so much general information on geography, as to enable him to read a news-paper with interest, to be entertained with books of travel, and to understand and sympathize, with Christian efforts of missionaries in foreign lands.

Position.—The knowledge of relative position, although secondary to a knowledge of the countries themselves, occupies a portion of each lesson in the second stage, and adds exactness to the mental image of the map. The directions to sail from Ireland to others countries; how countries lie towards each other, and how towns are situated: in this way the mind will not be burthened by names alone. The *globe* wil give more correct and extended knowledge of the surface of the earth. The position of a globe can be more varied than that of a map; thus giving a new aspect to the land and water. It may be turned upside down, to show the vast ocean surface of our planet, the great difference in the proportion of land in the northern and southern hemispheres, the ends of the continents projecting into the southern waters and ending in mountain ranges abruptly.

Latitude and Longitude.—The nature of these can be made simple by a dark ball. Put a chalk mark on it. Ask the pupil to tell the position of the mark so as to be understood. Draw half circles through the north and south points of the ball numbering them 1, 2, 3, &c., causing one of them —all being at equal distances apart—to pass through the mark. Let the teacher next draw circles round the ball at right angles to the first one, and one round the middle (Equator) numbering them, and passing one, through the white mark again. The intersection of circles numbering certain figures mark the position of the chalk. The whole boundary line of the earth is divided into 360 parts, or degrees, through each of which and its subdivisions a line is, or may be drawn; and hence all places on its surface may be determined.

A lesson may be given on the zones and their boundaries, and how these are determined, if not already anticipated, in the lesson on temperature.

The newspaper, as it gives the record of events occurring during the passing week or day, will give the teacher illustrations most varied and life-like. It tells of discoveries in Africa, Australia, and North America; of new sea routes between distant countries—such as the new Suez route to India, of earthquakes, and of all the other information, from our own or other climes, which go to make up a large portion of the daily talk of the adult population. The lists of shipping, alone, will give all the seaports in the world with their imports and exports. " Newspapers are the best possible public instructors."—(Lord Brougham).

Last stage.—The *exact* boundaries of each country now occupies separate attention; its latitude and longitude; its size as compared with the United Kingdom, or with Ireland. The writer has found the slates sold to national schools with the outlines of countries etched on them, to give most useful employment to learners in geography. The etchings are gone over with a slate pencil, and the names of the divisions, towns, &c., filled in. The river systems form most interesting lessons, taken in connection with the mountains they rise in, the plains they

flow through, the towns on their banks, their sites and appearances, exports, &c.

Inhabitants.—This subject rather belongs to history. Although moral causes have chiefly to do with the formation of character, yet it cannot be denied that race and material circumstances have some place in its formation. Switzerland and Scotland, with their mountain fastnesses, inspiring thoughts of freedom; the great fertile plains are associated with ease and perhaps dullness. England, possessed of its great coal and iron fields, shows us a manufacturing eminence unrivalled; Ireland deficient in these, turns to agriculture and dairy management, and finds a ready market in the great centres of English trade.

Historical Geography.—A noticeable deficiency in the school publications of our National Board, is the want of an historical handbook. This deficiency may, to some extent, be supplied through the geographical lesson. The teaching of history can, at the same time, be but incidental, not systematic. Salient points of interest are remarked, *in passing*, when speaking of places. Derry and Limerick, in reference to the seiges they sustained, and the heroic defence made. Carlisle, where Edward I, died when invading Scotland for the last time. Runnymede, near London, where King John signed *Magna Charta*. Thus geography is used in a casual way—the way it will afterwards be used when the pupil becomes a man.

(*To be continued.*)

On the Ways in which the Mechanical Powers &c., are illustrated in the Vegetable and Animal Kingdoms.

(A paper read before the College of Preceptors London; by the Revd. S. Henslow. M. A., F. L. S.)

(*Concluded.*)

Further Illustrations of Springs.—There are many other illustrations of the action of springs than those mentioned above, viz. of the claws of the keel and wing-petals of genista; and as the following is of a different nature, I have deferred alluding to it.

In the common Lucerne (*Medicago sativa*) the same object (viz. the dispersion of pollen) is gained by the peculiar *spring-like action of the stamens* themselves, and *not* by that of the petals; for while in others of the Pea family the petals are depressed, and thereby the stamens become exposed, in this genus the staminal tube (on inserting a pin in imitation of an insect's proboscis) escapes suddenly from its confinement, rises up, curls into a semicircular position, and there remains, having no elasticity by which its lost horizontality can be regained; while the sudden *explosion* of the flower throws a cloud of pollen upwards and towards the standard. An insect, however, being assumed to be there, it receives the pollen.

In the stinging-nettle, the stamens of the flowers which have no pistil (1) are curled inwards when in the bud; but as soon as it expands, they spring outwards, and so the pollen becomes scattered to the wind.

One of the most remarkable instances of a spring is to be found in the genus *Catasetum*, one of the curious family of "Orchids" (*Orchidaceæ*), and living in the West Indies. The pollen, instead of being powdery, consists of two oval masses of a waxy appearance. These are attached to a curled spring, of a very peculiar kind. If a quill be split in half, and one piece bent into a curve, the convex side outwards, that will give a fair idea of it. One end supports the two waxy *pollen-masses*, the other carries a heavy disc-like body, with a sticky surface. This *viscid-disc* (as it is called) is *hinged* to the spring, and can swing backwards and forwards. The spring, which is developed during the growth of the flower, is, on its expansion, in its position of tension, *i. e.* bent round a prominence, and kept so by the pressure of the *anther-case* upon the pollen-masses above, and by actual cohesion of the membrane of the *disc* below to the body of the flower. If this *pollinium* (as the whole spring, including viscid disk and pollen, is called) be artificially liberated, the spring straightens itself violently, the disc or *weighted* end flies out foremost, its under and viscid surface is thrown upwards, and adheres to any object that it may meet in its path of three or four feet. When, however, it is liberated by an insect, the creature will be standing in just such a position as to receive it upon the thorax, where it remains firmly attached, glued by the viscid disc. It then flies to the *pistillate* flower, which is so contrived as to receive the pollen mass exactly upon the stigma. (2)

Tension.—The force of tension is well exhibited in the "florets" of the so-called "flowers" of the large family *Compositæ*, which includes such genera as the Daisy, Dandelion, Corn-flower, Dahlia, and Chrysanthemum. The name "Compositæ" is dirived from the fact that the "flowers" of these plants are not single, but aggregations of florets, as they are designated from their minute size. Thus a "head" of a Daisy consists of one or more circles of florets, whose corollas are white, and "star-shaped" above, but contracting into a tube below. These surround the yellow "eye," which is composed of a number of perfect florets with "tubular" corollas. Each of them has five stamens, attached by their filaments to the inner surface of the tube. The filaments are *elastic*. (This may be well seen in the *Centurea* or Cornflower.) The five anthers, instead of being free, are united side by side, so that they form a minute cylinder held erect upon its five supports, the filaments. The tips of the anthers, in the early stage of the flower, meet together, and so close the summit of the cylinder. The style of the pistil passes up the centre of this anther-cylinder, so that its extremity abuts against the closed end of it. The stigmas, when fully developed, consist of two flat branches, having the "stigmatic" surfaces, which have to receive the pollen, placed in conjunction and addressed together.

At the period of expansion of the corolla, the style is continually elongating; and by pressing upwards, has *stretched the elastic filaments to their fullest extent*, so that as soon as the anther-tips give way, the filaments, by their contraction, *drag the anther-cylinder* downwards, while the style immediately protrudes upwards, elevating the stigmas into the air above: but on their appearing, the tuft of hair on the style, just below the stigma (in the genus Centaurea), has swept out the pollen from the anther-cells, which burst into the interior of the cylinder. The grains of pollen thus ultimately appear aggregated on or about the summit of the elevated style.

It is not until the style is well through the anther-tube that the two branches of the stigma (which can be well seen, for example, in the Dandelion) diverge and so expose their "stigmatic" surfaces, and are thus ready to receive the pollen conveyed by insects from some other flower.

As a general effect of the above process, it may be noticed how an ordinary purple Cineraria, when the "flower" appears first expanded, is of a uniform colour; but in a day or two it will be found studded with little golden spots, which prove on examination to be the clusters of pollen grains elevated upon the branching stigmas.

The above illustrations from the vegetable kingdom will be sufficient to show how varied are Nature's contrivances for securing some definite purpose; and those teachers who introduce botany into their curriculum will perhaps find an additional aid in the descriptions here given for pointing their teaching with instructive material where perhaps it might not have been expected.

Illustrations from the Animal Kingdom.—In calling attention to some few of the well-known illustrations of lever-action in the animal kingdom, it will suffice to mention one of each kind of lever in the human frame, though many examples could be given.

(1) In this genus, the stamens alone occur in the flowers on one plant, while the pistils alone in flowers of another.

(2) For further particulars of this and other genera, I must refer the reader to Mr. Darwin's work on the "Fertilization of Orchids.

As an example of the first kind, may be mentioned the complexus and if a teacher should desire more, he will easily obtain them from some elementary work on human or comparative anatomy of the muscle of the spine; or, still better, the trapezoid attached to the back of the head and shoulders, and by which the head is drawn back. Here the excess of the mass of the head in front is the weight; the termination of the vertebral column forms the fulcrum; while the muscle constitutes the power. Another and well illustrative instance is in the "ham-strings," or the muscles of the legs, by the contraction of which on the back of the thighs the weight of the body is drawn up from a stooping posture into an erect attitude.—the oscillation taking place on the hip-joints, which act as fulcra.

Perhaps the best illustration of the second kind of lever is found in the foot. Here the ball of the toe and heel constitute the two supports for the weight of the body, acting downwards in a vertical line through the sole of the foot, and therefore between the heel and toe.

These latter, therefore, are power or fulcrum respectively according to the way in which the body (the weight) is raised. If the tendon Achillis, running up into the muscle which forms the calf, and which is attached to the heel-bone, act as the power, then the ball of the toe will be the fulcrum; but if the heels be on the ground, and so become the fulcrum, then the tibial muscles on the front of the leg act as the power by their contraction, their tendons passing over the instep.

As an illustration of the third kind of lever, may be mentioned the arms. In these the biceps muscle, which lies in front of the *humerus*, between the shoulder and elbow, is attached to the *radius* below the elbow and the front; so that, the elbow joint acting as the fulcrum, anything placed in the hand would be the "weight," and the biceps the "power," thus acting *between* the weight and fulcrum, at a manifest disadvantage, as far as force is concerned, but with the gain of a rapidity of action which is a decided compensation.

It may be here mentioned, that as almost all muscles, which, by their contraction, exert a force in some particular direction, are balanced as it were by others, the office of which is to counteract the former, or exert a force in a contrary direction,—as we have seen in the case of those which raise the heel and toes respectively: so in case of the arm, the biceps acting as a lever of the third kind, is balanced by the triceps, which acts as one of the first kind, and in the opposite direction; the biceps raising the arm, the triceps lowering it.

As an illustration of a simple pulley by a muscle acting through a loop—not, however, gaining force thereby, but simply a reversal of line of action—is the *obliquus superior* of the eye, which enables us to turn that organ horizontally *outwards*. (1)

Another remarkable instance of an action somewhat resembling a simple pulley, is to be found in the *odontophore* of all the mollusca, except the order *Lamellibranchiata* (Bivalves, e. g., oyster, cockle).

In the garden snail, for example, the mouth is furnished with a long strap-like organ, which carries rows of parallel and recurved teeth. This "tooth-bearer," or odontophore, is attached to the lower surface, and at the orifice of the alimentary canal, passing over a moveable "cushion"; so that, by a sort of oscillating motion backwards and forwards, the odontophore acquires a rasp-like action.

Illustrations of a screw are well displayed in the flight of insects and birds: each flap gives a screw-like action to the wings; whereby the air is transmitted along the under surface from before backwards, and driven out, as it were, behind; while a resolved portion of the force urges the bird onwards.

The wing itself instances a lever of the third kind: "there weight being the body of the animal in flight, the force resides in the pinion, and the thin medium of the air is the fulcrum."(1) —*Educational Times*

(1) Another of a similar character is the *obliquus externus femoris*.

(1) Dr. Pettigrew on "The Mechanism of Flight."—Transactions of Linnæan Society. Vol. xxvi., p. 215, note

For further particulars on the peculiarities of flight, the reader is referred to this valuable paper, as well as the article "Motion," in Todd's Cyclopædia of Anatomy and Physiology.

Educational and Literary Summary of the Month in England.

The Report of the Committee of Council which has recently been issued, is interesting, as being the last which will relate entirely to the proceedings and the state of national education under the present *régime*. It appears that the Schools in England and Wales under inspection and actually visited in the last three years, furnished accommodation, in 1867, for 7·46 per cent.; in 1868, for 7·91 per cent.; and in 1869, for 8·34 per cent. of the whole estimated population. The average attendance as compared with the same population, rose from 4·53 per cent. in 1867, to 4·85 per cent. in 1868, and to 5·24 per cent. in 1869. There were, it seems, last year, 8,563 day schools in Great Britain to which annual grants were made. These would accomodate over two million scholars; but there were on the register not more than 1,797,388 children, of whom 1,157,005 were between six and twelve years of age. Since 1859, the school accommodation as well as attendance has nearly doubled. There are 744 schools which, though under inspection, do not fulfil the conditions on which annual grants are made. The night schools form another important element in the system; numbering 2,307, and teaching 66,841 scholars. As to the supply of trained teachers, the Report states that the English Normal schools, which furnish accommodation for 2,500 students, could turn out every year 1,250 teachers who had gone through a two years' course of training. This supply, if the school life of a teacher under a thoroughly organized system of public instruction is estimated at twenty years, would keep up a staff (when once established) of 25,000 trained teachers for elementary schools, without taking into account the number that enter the profession through other channels. The training-schools in Scotland, the Committee assume, could, in like manner, maintain a body of 7,660 duly trained teachers—a number somewhat in excess of the requirements of that part of the kingdom.

The results of the examination for women, held by the University of Cambridge in July, are as follows:—Eighty-four candidates entered. 12 withdrew before the examination, and 21 have failed to satisfy the examiners. Thirteen have obtained a first class, and 19 a second class, in the English group; eight have obtained a first class in 'language,' and three a second class. None have obtained honours in mathematics, political, economy. physical science, music, or drawing, but some have passed in each of these several groups.

In 1866, the French Government sent over MM. Demogeot and Montucci to examine the different systems of teaching employed in Great Britain. The first result of their visit was a volume published in 1868, giving a detailed account of our secondary education; they have now issued their report on the higher and professional education imparted at our Universities and elsewhere. MM. Demogeot and Montucci seem to have paid a long visit to the different Universities of Scotland, and furnish an elaborate account of their past history and present character. The verdict pronounced declares their system to possess a marked superiority over that of the old Universities of England. "In Scotland," says the report before us, "men do not come to the University to win boat-races and run into debt, but to work hard and put themselves in a position to earn their living." At the same time, one great defect is noticed in the Scottish system. The facility of entrance lowers the character of the teaching, and it is necessary to give quite elementary lectures in Greek and

Latin grammar, in Euclid and Algebra, in order that they may be within the comprehension of the ignorant classes who listen to them. The result of this is, that a great many good mechanics are spoilt in order to make of them bad men of learning. The already overstocked professions are recruited with inferior men, who would engage with far more advantage to themselves and others in some kind of trade and handiwork; and the Universities are lowered without any corresponding advantage accruing to the country.

The Lords of the Admiralty have supplemented the reorganization of the fund for Greenwich Hospital by a total change in the administration of the Schools attached to this now dismembered establishment. By a Parliamentary Paper recently published, it appears that the total expenditure on account of these Schools during the financial year 1868-9 amounted to 23,491*l*,, or an average cost of 29*l*. 3*s*. 10*d*. for each boy. It is calculated that under the system about to be inaugurated an annual saving of 6,113*l*. over the present expenditure will be effected. All officers engaged under the old system have been superseded, and the new staff will consist of a superintendent and a medical officer. Industrial occupations, including practical seamanship, will be taught on alternate days with school work. All the boys are to be taught to make and mend their own clothes; and masts, yards, and sails of a ship are to be provided for their use in the grounds as well as boats for exercice on the river. The Committee appointed to inquire into the condition of the School consisted of the late Civil Lord of the Admiralty, Captain G. G. Randolph, Dr. J. Woodley, Mr. E. C. Tufnell, and Mr. G. W. Hillyard. The plans for the future administration of the Schools appear to be founded in a great mesure on the rules that regulate the Central Industrial Schools at Hanwell.

The Edgbaston Orphanage, founded, built, and endowed solely by Mr. Josiah Mason, at a cost of nearly 250,000*l*, has now been opened for nearly twelve months at Birmingham. We learn from *Nature* that Mr. Mason, following the example of Sir Joseph Whitworth, has now in contemplation another public work of even greater ultimate importance, namely, a College and Schools for scientific and technical instruction, open to all classes, and, if the hopes of the founder should be realised, capable of expansion into one of the noblest institutions in the kingdom. As yet the plan is only *in initio*, and some time must elapse before it can be carried into effect; but the *Birmingham Daily Post* states that a beginning has been made, and that, for the purpose, above mentioned, Mr. Mason has agreed to buy a large block of land in Edmund-street, exactly facing Ratcliffe-place, between the Town-hall and the Institute, and reaching back to Great Charles-street. The purchase-money, it is understood, is more than 20,000*l*., a magnificent earnest of the ultimate scheme which Mr. Mason has in contemplation.

The Programme of Examinations of the *Society of Arts* for 1871 has been published. It differs but slightly from that of the present year. The principal changes are the following.—The subjects of "Mental Science," and of "Civil Government," which have been hitherto added to "Logic and Political Economy," will in future be separated from these subjects. The paper formerly set in the "English Language and Literature," will now be confined to the "English Language" exclusively. Two new subjects have been added; viz., "French Commercial Correspondence" and "German Commercial Correspondence." The papers set will be intended to test the capacity of Candidates to fill the office of foreign correspondent in a house of business, and the Certificates will be for the first-class only. No prizes are offered in these subjects, nor will the Certificates be counted for the Prince Consort's Prize.

The following is a summary of the Report of the Science and Art Department for 1869–70, just published:—"The influence of the Department throughout the United Kingdom is being extended year by year in a rapidly increasing ratio, and the numbers of persons who have, during the year 1869, attended the schools, museums, and other institutions receiving aid from the Parliamentary Vote, are considerably greater than in any previous year; and it is especially satisfactory to observe that the number of persons receiving instruction in Science applicable to Industry, has increased from 15,010 in 1868, to 21,500 in 1869, or upwards of 43 per cent. The number of individuals instructed in Art has also increased from 123,562 to 157,198, or 27·2 per cent. At the Royal School of Mines there have been 17 regular, and 93 occasional students; at the Royal College of Chemistry, 136 students; at the Royal School of Naval Architecture there were 40; and at the Metallurgical Laboratory, 35. The evening lectures were attended by 1617 artisans and School teachers; and 253 Science teachers attended the special courses of lectures provided for their instruction. At the Royal College of Science, Ireland, there were 32 individual students; and 5773 persons attended the various courses of lectures delivered in connexion with the Departments in Dublin. The attendance at the Evening Popular Lectures which were delivered in the Edinburgh Museum of Science and Art during the session 1868—69, was 1386. The total number of persons, therefore, who have received direct instruction us students, or by means of lectures, in connexion with the Science and Art Department, is upwards of 187,000, a total exceeding that of the previous year by 41,300, or 28 per cent. This shows an increase *in the rate of progress*, as compared with that of the previous year, of 10 per cent, the numbers in 1868 having been nearly 18 per cent higher than in 1867. The museums and collections under the superintendence of the Department in London, Dublin, and Edinburgh have been visited by 1,798,842 persons, showing an increase of 13·7 per cent., on the number in the preceding year, which was 1,581,855. The attendance at the Art and Educational Libraries and at the Library of the Royal Dublin Society continues to exhibit a satisfactory progress; the numbers in 1869 having reached a total of 48,244, being 10,315, or 27 per cent., more than in 1868. The returns received of the number of visitors at various Local Art and Industrial Exhibitions, to which objects were contributed from the South Kensington Museum, show an attendance of upwards of 338,000, as against 290,000 in the previous year. The total aggregate increase therefore in the number of persons who have availed themselves of all the different means afforded by the Department of obtaining instruction in Science and Art is upwards of 596,000, or 33.5 per cent., on the number in 1868; the approximate totals being 1,775,400 in 1868, and 2,372,000 in 1869. The expenditure of the Department during the financial year 1869—70, exclusive of the vote for the Geological Survey, was 201,552*l*. 15*s*. 10*d*., or 2,851*l*. 9*s*. 11*d*. more than in 1868, when it amounted to 198,701*l*. 5*s* 1d*d*.—*Ibid.*

On Modern Chemical Notation.

By J. Baker Edwards, Ph. D., F. C. S., Montreal.

(*Continued from page* 110.) (1)

The Typical system upon which the Unitary Method is framed assumes that the atoms of simple as well of compound bodies are arranged in molecular groups, and that chemical union is the result of a substitution of one or more atoms composing the original molecule by atoms of other elements, which after combination form compound molecules preserving the original type.

Thus Hydrogen being a monad is conceived to consist in its volume of associated atoms, one and one, forming simple molecules of Hydrogen, one atom being replaceable in each molecule by some other element in the exercise of its affinity. Thus Hydrogen and chlorine, both being univalent, exchange thus;

H + H, forms the molecule of H
Cl + Cl., forms the molecule of Cl

by union of these and mutual substitution.

(1) *Correction.*—In the fourth line from the end of the article, on page 110, *mechanical* molecule of Laurent should be *chemical* molecule, &c.

H Cl + H Cl is formed in duplicate and we have (2 HCl) but when H + H combines with a bivalent such as Oxygen O′ the single molecule O′, Eq 16 combines with the double molecule HH, forming H_2 O. Chemical action generally is thus reduced to a series of substitutions taking place through Affinity between atoms of unlike nature converting simple into compound molecules. The "atom" becomes no longer the expression of the combining quantity, the term "molecule" is preferred to express that congerie of atoms which gives definite proportion to chemical union. The term "equivalent" has long been used to express the same ideal quantity, and is still unexceptionable.

The idea of substitution of one element for another in compounds retaining the original type is quite familiar to Chemists. Thus the Æther series is converted into Chloral and Chloroform. by the substitution of Cl. for H: and N_2 O_4 nitric oxide takes the place of H in the series of Xyloids, converting Starch Wood and Paper into Gun cotton Gun paper and photographer's Xyloidine.

Modern discoveries in Organic chemistry have been rapidly extending the list of such substitution compounds, and in the chemical history of the Aniline dyes we have a most elaborate series of such compounds, which illustrate both the simpler and the more complex of such typical series, and embrace both those of the Ammonia, and of the Alcohol series .It may be interesting to sketch the chemical history of some of these compounds in illustration of the general subject. Benzol, a product of the distillation of Coal Tar is a simple Hydrocarbon, and is well known in a crude form as Coal Tar Naptha. Its formula is C 6 H 6. When treated with strong Nitric acid it is converted into Nitro-Benzol, an oily and dense fluid known in commerce as "Artificial oil of Bitter Almonds" it is largely used in the manufacture of almond soap. It is a substitution compound resembling the Xyloids, in which one molecule of Hydrogen is replaced by one of Nitric Oxide. By the action of nascent Hydrogen upon this compound the Oxygen is removed in the form of water and a new base is obtained called Aniline, having the composition C_6N H_7. In the Ethyl series we have as typical bases

1 Methyl, $C H_3$
2 Ethyl, $C_2 H_5$
3 Phenyl, $C_6 H_5$
4 Napthyl, $C_{10} H_7$

In the Ammonia series we have

Ammonia NH_3
Diamine $N_2 H_6$
Triamine $N_3 H_9$
Tetramine $N_4 H_{12}$

and a series of substitution compounds are produced, preserving the typical character of these Ammonias, but in which the molecules of Hydrogen are severally replaced hy Methyl, Ethyl and Phenyl; forming compounds whose relations would be most obscure were we to regard their chemical composition without reference to this typical character.

Thus; of the Ammonia series $\left(\begin{matrix}H\\H\\H\end{matrix}\right\}N\Big)$ we have by replacement; Methyl-amine $\left(\begin{matrix}H\\H\\CH_3\end{matrix}\right\}N\Big)$

Di-Methyl-amine $\left(\begin{matrix}H\\CH_3\\CH_3\end{matrix}\right\}N\Big)$

Tri-Methyl-amine $\left(\begin{matrix}CH_3\\CH_3\\CH_3\end{matrix}\right\}N\Big)$

by Phenyl replacement we have in like manner a similar series.

Phenyl-amine $\left(\begin{matrix}H\\H\\C_6H_5\end{matrix}\right\}N\Big)$

Di-phenyl amine $\left(\begin{matrix}H\\C_6H_5\\C_6H_5\end{matrix}\right\}N\Big)$

and Tri-phenyl-amine $\left(\begin{matrix}C_6H_5\\C_6H_5\\C_6H_5\end{matrix}\right\}N\Big)$

In the Diamine or double Ammonia compounds the same substitution character is preserved and from Diamine H_6N_2 we derive Ethyline Diamine $\left.\begin{matrix}H_4\\(C_2H_4)\ ''\end{matrix}\right\}N_2$

Phenylene Diamine $\left.\begin{matrix}H_4\\(C_6H_5)\ ''\end{matrix}\right\}N_2$

It was during the study of these interesting compounds that Hofman, Nicholson and Perkins discovered the wonderful aniline dyes, and their constitution is explained by a constructive theory such as the above applied to a still more complex typical series; that of Tetramine, in which Ammonia is quadrupled or Diamine doubled.

The Mauve colours are salts of a base called (Mauveine) having the typical constitution of Tetra mine, thus;

Tetra-mine ($H_{12}N_4$) is resolved by the substitution of 8 molecules of Hydrogen by 8 molecules of a base having the formula

Mauveine is therefore $\left(\begin{matrix}C_{26}H_{20}.\\(C_{26}H_{20})\ \text{VIII}\\H_4\end{matrix}\right\}N_4\Big)$

The Magenta colours are formed of substitution compounds having an intermediate type between Diamine and Tetramine, viz Tri. Amine. (H_9N_3),
and Rose aniline the base of these colours consists of

$$\left(\begin{matrix}C_{20}H_{16}\ \text{VI}\\H_3\end{matrix}\right\}N_3\Big)$$

The colours known as Imperial Violet, Hofman Violets and Opal Blues, are a series of phenyl substitution compounds derived from the above thus;

$\left(\begin{matrix}C_{20}H_{16}\ \text{VI}\\C_6H_5\\H_2\end{matrix}\right\}N_3\Big)$ phenyl rose aniline, base of "*Imperial Violet.*"

$\left(\begin{matrix}C_{20}H_{16}\ \text{VI}\\(_2C_6H_5)\\H\end{matrix}\right\}N_3\Big)$ Di. phenyl rose aniline base of "*Imperial Purple.*"

$\left(\begin{matrix}C_{20}H_{16}\ \text{VI}\\(_3C_6H_5)\end{matrix}\right\}N_3\Big)$ Triphenyl rose aniline base of "*Opal Blues and Bleu de Lyons.*

It will thus be seen that this principle of molecular substitution, is not limited to the simple cases of Elementary combination, but extends to the most complicated and difficult branches of Organic chemistry. Its general adoption is indeed the result of an overwhelming mass of discovery, which, without such aid, would be (in consequence of the frequent isomerism of Organic Compounds) with difficulty reduced to order and to Method. Not only has this doctrine been the exponent of many otherwise difficult problems, but it has, in many cases, and notably in those last quoted, been the index pointing out the paths of future discovery, and therefore deserves the careful study of every true lover of the Science of Chemistry.

History of Canada.

JACQUES CARTIER AT HOCHELAGA.

On Sunday, Oct. 2nd, Cartier arrived at Hochelaga. He was very kindly received, for the people nearly all turned out to meet him, bringing presents of fish and maize. Dressed in their best clothes, Cartier and his followers landed and were led into the village. This was found to contain about fifty cabins, each fifty paces long and twelve or fifteen feet wide. They were covered with bark. Around the village there was a high fence, or *palisade*, made of three rows of stakes. The palisade was made strong by means of the roots and branches of trees. There was only one opening for a gateway into the village. The inside of every cabin was parted off into spaces, in

each of which a family dwelt. There were platforms or galleries within the palisade at different places. Near to these were heaps of stones intended for defence against attacks from without.

According to his custom, Cartier made presents to the Indians. Their chief, being a cripple, was carried in, and seated near the French Captain. He had only a coloured stripe of porcupine skin round his temples, to shew his rank. This he took off and placed on Cartier's head as a mark of honour.

When Cartier rose to depart, the friendly savages crowded round him and tried to make him stay. But he was anxious about the safety of the Emérillon, left in the river below, and about his people at Stadacona. So he had made up his mind to shorten his visit.

Before he left Hochelaga, Cartier went up to a high place on the hill, hard by. From this there was a fine view of the forests and waters. He was so pleased that he chose for the hill the name of "The Royal Mount." This, afterwards, became changed into *Montreal.*

He also tried with the help of the Indians, to pass up the rapids beyond Hochelaga, but could not.

Having found out, by means of signs, that the river flowed from a long distance inland, and that there were some great lakes, Cartier and his companions took their leave.

The Emérillon was found safe at the place where she had been left, on Lake St. Peter. After planting a wooden cross on one of the islands in the lake, and taking notice of the mouths of the river *St. Maurice,* Cartier, with the Emérillon and his barges, arrived off Stadacona on October 11th.

A TERRIBLE WINTER AT STADACONA.—DONNACONA SEIZED—RETURN TO FRANCE.

While Cartier was absent on his trip to Hochelaga, his people at Stadacona had made a sort of fortress of the station at the mouth of the St. Croix. A high fence had been raised in front of the ships, so that, with the aid of cannon, those on board could prevent all approach when they pleased.

Although the natives did not shew themselves to be open enemies, yet some slight quarrels occurred early in the following winter, which might have proved serious if the French had not taken pains to be safe from attack.

Cartier's people at St. Croix had plenty of food, such as biscuit, salt meat and other provisions commonly stored for use on board ship. Very likely, they may have had besides, from the Indians, dried fish, eels, maize, and beans. But, for such a climate as that of Canada they had not brought nearly enough of warm clothing. They must have had to work hard to keep themselves supplied with fuel.

Consequently, the labour, and the cold weather, together with the want of proper clothes, and of fresh meat and vegetables, brought on a terrible disease called *scurvy.* Persons who have this disease suffer a great deal. Their legs swell and become black or speckled with spots of blood, also their shoulders, necks and arms. The gums decay, and, with the teeth, fall out of the mouth. In short, the sick lose their strength so that they cannot move about, and then death comes. Such was the condition of Cartier's men in the winter of 1535. We are told that, out of one hundred and ten, who made up the crews of the three ships, all except *ten* became helpless. Twenty five died. It was found difficult, from want of strength, to remove the dead bodies and hide them in the snow. None expected ever to see France again. It was quite necessary to prevent the Indians from knowing their sad state, for fear of their being tempted to rush in and murder all. On this account Cartier refused to allow any Indian to come within the palisade. This, of course, vexed the savages. They would, perhaps, have forced their way into the ships, if they had known how matters really stood.

Presently, Cartier himself caught the disease and could scarcely move about. Yet, although now he must have lost heart, he tried to cheer his men. He told them to pray for Divine aid. He also made a vow to go on a *pilgrimage,* in case God should spare him to see France again.

Just at this time Cartier espied Domagaya coming towards the ships along with a band of Indians. Domagaya had been very sick with the disease, but now seemed well. So Cartier asked how this had happened. He learned, in answer, that by steeping the leaves and bark of the spruce fir tree, a medicine for the cure of scurvy could be made.

Thus, by accident, the French captain found out a way of curing his people. Within eight days most of the sick were well. On the approach of spring all were again fit for duty, to the number of 84 men.

Cartier then began to prepare for the voyage home. Two of the ships were cleared of ice and moved out into the St. Lawrence. The third had, perhaps, been broken up for fuel. At any rate it was not needed, for there were now fewer men to be carried, and a far less quantity of provisions and of other things.

But before he set sail, Cartier had formed a design, for which, as on a previous occasion, he must be blamed. This was to seize and carry away to France the chief Donnacona, together with several of his warriors.

Donnacona had become suspicious. All knew about the two young men whom Cartier had seized at Gaspé the year before. Donnacona feared lest the same wrong might be done to himself. So he kept as much as possible out of Cartier's reach. However, he proved unable to avoid the evil he dreaded.

On May 3rd, 1536, Cartier caused a wooden cross, 35 feet high, to be raised on the bank of the St. Croix. It had carved upon it the words "Francis I. by God's grace, king of the French, reigns."

Donnacona, with many of his own people, came to visit the French captain. Cartier had men ready to seize him and a few of his warriors. They were taken and placed on shipboard. The rest of his people betook themselves to flight. Some say that Taiguragny and Domagaya were among those seized. It has also been stated, in defence of Cartier's act, that Donnacona himself was on the point of attacking the French with a great number of warriors, whom he had collected in Stadacona.

It is not clearly known that all these statements are true. But it is well known that Cartier meant, at any rate, to capture Donnacona and others in order to present them at the Court of France. He thought they would be useful in making king Francis feel more concern respecting the new countries. About ten persons were thus seized.

The people of Donnacona were in great distress on account of the loss of their chiefs. All night their sad cries were heard along the river bank. Next day Cartier made Donnacona shew himself on the ship's deck. The captive chief then said to his people that he was only going to visit the king of France, but would return to them next year.

Soon afterwards, on May 6th, the Great Hermine and the other ship, sailed. The poor savages of Stadacona lost sight of their chief and countrymen, and never again beheld them. While we cannot help blaming Jacques Cartier for an action which seems to us so cruel, it is fair to mention that many other sea-commanders have done the like.

Cartier's voyage home lasted more than two months. He landed at St. Malo on the 16th of July, and then went to Paris to make his report to the King.

Francis received him with favour, and saw the chiefs. He ordered them to be taken care of and to be instructed in religion. He would, perhaps, have sent Cartier on another voyage the following year, but he was then at war with the Emperor of Spain and Germany, which took up all his attention. Not only the captive Indians, but Cartier himself fell out of notice. The Indians died. Cartier staid at home, at St. Malo, waiting for better times.

History of England.

THE SOVEREIGNS OF ENGLAND.

WILLIAM THE CONQUEROR.

Born at Falaise, in Normandy, 1021. Died at Hermentrade, in Normandy, September 9, 1087. Reigned 21 years.

Duke William of Normandy claimed the crown of England because Edward the Confessor had promised that he should be his heir, ; and shortly before that king's death many of the English nobles had sworn to obey his wish. Harold himself had sworn it, but afterwards said he had been deceived. When Harold assumed the crown, William collected a very large army, and, crossing the British Channel from Normandy, landed without opposition. Harold, who was a very brave king, hastened to meet him, but was killed near Hastings, after a severe battle. William built a fine abbey on the spot, and called it Battle Abbey. He met with great opposition from the English people, especially in Kent, at London, and in the northern counties; but was crowned at Westminster on the 29th of December. 1066. For the first ten years of his reign there were freqnent insurrections; but he seized all the rich manors, and gave them to his Norman friends, who built strong castles in almost every town, and so kept the native citizens, and thanes, as the landowners were called, in subjection. He made Normans bishops and abbots, judges and sheriffs, and ordered that the Norman laws should be established, and the Norman language used on all state occasions. He built the Tower of London;

and there were other castles built in the city, where his friends kept large bodies of armed men; so that he soon became master of the country, and the poor Saxons were little better than slaves. He caused a book to be made, in which were inscribed the names of all the landowners in England, and the extent of their property, and this Doomsday Book, as it was called, is still kept among the records at Westminster Abbey. He instituted the curfew, or "cover fire"—that is, that all lights and fires should be extinguished at eight o'clock at night, when a bell rang to announce the time. William several times visited Normandy, being engaged in a war with the King of France. In 1085, his queen, Matilda, daughter of Baldwin, Earl of Flanders, died; and two years afterwards, when in Normandy, his horse stumbled, and threw him; and so much was he hurt that he died there, and was buried in a monastery which he had founded at Caen.

WILLIAM II.

Born in Normandy, 1057. Died in Hampshire, August 2, 1100. Reigned 13 years.

The second son of the Conqueror was called William Rufus, or the Red-haired. On the death of his father, the Eldest son Robert succeeded as Duke of Normandy; and William, who was in England at the time, took possession of the royal treasures, and caused himself to be proclaimed king. Robert, as the eldest son, claimed the crown, and many of the Norman barons were in favour of his claim, and rose in insurrection, but were defeated by the friends of Rufus, who was crowned in Westminster Abbey on the 27th of September, 1087. Two years afterwards he went, with a large army, to Normandy, for the purpose of making war upon his brother; but they came to an agreement not to fight, and that the one who lived longest should possess both Normandy and England. Another quarrel, however, soon broke out, and William once more invaded Normandy, but was obliged to return to suppress an insurrection in Wales. This was not the only attempt made to oppose his authority; for the Earl of Northumberland and some other Norman lords conspired against him; but their plot was discovered and they were cruelly punished. In 1096 Duke Robert sold the duchy of Normandy to his brother Rufus for 10,000 marks; and in the next year the Welsh were subdued. The king intended to complete a fine new palace at Westminster, which had been begun by Edward the Confessor; and ordered a beautiful banqueting-hall to be built—that is, Westminster Hall, next to the Houses of Parliament. He was a hard, unfeeling man, and was much disliked and feared by many of his subjects. Hunting was one of his amusements; and one day, while hunting in the New Forest, Hampshire, one of his attendants, Sir Walter Tyrrel, shot an arrow, which glanced from a tree and pierced the king, who fell dead from his horse. Many persons said Sir Walter intended to kill him. The body of the king was taken on a woodman's cart to Winchester, where it was buried; and the descendants of the woodman still live on the same spot.

HENRY I.

Born at Selby, in Yorkshire, 1068. Died in Normandy, December 1, 1135. Reigned 35 years.

This was the youngest son of the Conqueror. Directly he heard of the death of Rufus he seized the royal treasury at Winchester, and was accepted as king, no regard being paid to the arrangement between William and Robert. The Duke of Normandy landed at Portsmouth, and claimed the crown; but it was at length agreed that Henry should remain king, paying Robert 3,000 marks every year, and that the survivor should succeed to both England and Normandy. This promise was no better kept than the similar agreement between William and Robert; for only four years afterwards Henry invaded Normandy, defeated his brother, and took him prisoner. The unhappy Robert had his eyes put out, and was a captive for twenty-eight years in Cardiff Castle, where he died. The same year that he came to the throne King Henry married Matilda, daughter of Malcolm, King of Scotland, and had two children. One of them, Prince Henry, was drowned, with his young bride and nearly 200 attendants, in 1120; the ship in which they were sailing from Normandy being shipwrecked. The king was terribly grieved by this misfortune, and, it is said, never smiled again. The king's daughter, the Princess Matilda, or Maud, was engaged to be married to the Emperor Henry IV. of Germany, being only eight years old at the time. The king laid a tax on land, and by that means raised nearly £824,000, an immense sum in those days, for a marriage portion. Queen Matilda, the king's wife, died in 1119; and two years afterwards the king married Adelais, daughter of Godfrey, Earl of Lovain. There were several insurrections in Normandy in favour of William, a son of Duke Robert, but they were suppressed. In 1126, and again 1130 and in 1131, the chief nobles of the kingdom swore to accept as successor to the throne the Empress Matilda, who was again married to Geoffrey Plantagenet, Earl of Anjou, in 1130. In December 1135, the king, who was in the habit of eating very greedily, ate too many lampreys, a kind of eel, and was taken so ill in consequence, that he died. His heart, head, and some other parts were buried at Rouen; but the rest of his body was brought to England and placed in a splendid monastery which he had founded at Reading. He left immense wealth, which he had saved during the thirty-five years he reigned; and previous to his death named his daughter Matilda as his successor.

STEPHEN.

Born 1096. Died at Dover, October 25, 1154. Reigned 19 years.

Stephen, Earl of Bologne and Mortaign, was the son of Adela, the fourth daughter of William the Conqueror, and therefore nephew of King Henry I. He had sworn to receive the Empress Matilda as queen; but, as she was not in England when her father Henry, died, he usurped the crown; his two brothers, the Bishops of Winchester and Salisbury, and several of the nobles assisting him. In December, 1135, he was crowned in Westminster Abbey, and the nobility paid him homage. He seized all the late king's treasures, amounting to about £100,000; and so was able to support a large army, which defeated David, King of Scotland, who came into England as a friend of Matilda. He also encouraged the nobles who were on his side to build a great number of castles; and it is said that not less than 1,100 were erected. In 1137 Stephen subdued Normandy, where there had been another revolt; but in the same year there was a war with the Welsh, who defeated the king's troops. In 1139 the Empress Matilda landed in England, and there was a rising in her favour, headed by the Earl of Gloucester, who was related to Matilda. For nearly two years there was continual fighting; and in February, 1141, there was a battle at Lincoln, in which Stephen was defeated, taken prisoner, and sent to Gloucester gaol. But shortly afterwards the Earl of Gloucester was captured by the king's friends, and Stephen was neased and exchanged for him. The next year Matilda, who had be declared queen, was besieged at Oxford, and escaped in disguised; in 1637, she left the kingdom. Two years afterwards her son Henry attempted to raise a party in her favour, and partly succeeded; but in 1153 a peace was made between him and Stephen, and it was agreed that the king should reign quietly, that Henry should succeed him, and that the 1,100 castles built should all be destroyed. On the 25th of October, 1554, Stephen died, and was buried at Feversham Abbey, in Kent. During his reign he abolished the Danegelt, or payment to the Danes and a great many abbeys were built.

OFFICIAL NOTICES.

Ministry of Public Instruction.

APPOINTMENTS.

The Lieutenant-Governor, by an Order in Council, dated the 27th of September last, was pleased to appoint the following:—

SCHOOL COMMISSIONERS.

St. Norbert, County of Arthabaska:—Messrs. Ferdinand Bécotte, Narcisse Talbot and Onésime Massé to replace Messrs. François Larivière Narcissse Talbot and Fidime Lemieux, respectively;

Stanfold, County of Arthabaska:—Louis Joseph Gravel, Esq., M.D., to replace J. A St. Germain, Esq., and Léon Thibodeau, Esq., to replace Casimire Vallières, Esq;

St. Siméon, County of Charlevoix:—Messrs. Michel Tremblay and Epiphane Bellay, to replace Messrs. Séraphin Guérin and Antoine Boucher Belleville;

St. Alphonse, County of Joliette:—Mr. Ludger Robichaud, to replace Mr. Joseph Lepage;

Tadoussac, County of Saguenay:—Messrs. Onésime Bouliane, Joseph Etienne Dufour, Moïse Fortin, Joseph Caron and Michel Dufour, to replace Messrs. William Manning, Eugène Tremblay, Epiphane Brisson, Luc Maltais and François Bourgoin;

St. Hippolyte, County of Terrebonne:—Messrs Evariste Lantier, Joseph Dagenais, John McLaughlin, Louis Maillé and Alphonse St. Germain.

SCHOOL TRUSTEES.

Chicoutimi, County of Chicoutimi:—Robert C. Blair, Esq, M. D, and Grant William Forest, Esq., to replace the Hon. D. E. Price and James Alexander, Esq.

—

ERECTION, ANNEXATION, AND REANNEXATION OF SCHOOL MUNICIPALITIES.

The Lieutenant-Governor,—in virtue of the powers conferred on him by Cap. 51, Sec. 8 of the Consolidated Statutes for Lower Canada,—by an Order in Council, dated the 27th of September last, was pleased

To erect,—into a New Shool Municipality, in the County of Gaspé,—under the name of *Anse à Valeau*, with the following limits, namely,—from the property of Thomas Savage, inclusively at the South-East, running to the South-West as far as the line of Grand Etang exclusively, about fifteen miles by two;

To decide that the Order in Council of the 29th of March last be altered to read as follows:—"That lot number twenty-one of Tingwick be annexed to the School Municipality "of Chénier, the three residents thereon being too far from Tingwick, "while they reside only a few arpents from the village of Chénier;

To decide on the application of Messrs. David Black, Robert Miller, Andrew Miller, William Miller, sen.; William Miller, junr.; John Wood, William McAdam, James Ross McAdam, and Andrew Hodge, that the Order in Council of the twenty-first of August, 1868, be revoked, and that the lands of said proprietors, which were, by said Order, annexed to the Municipality of the Parish of St. Jérusalem, be reannexed to that of St. Canut, the change caused by said Order not having produced the expected results.

—

DIPLOMAS GRANTED BY BOARDS OF EXAMIMERS.

STANSTEAD.

Session of August, 2nd, 1870.

ELEMENTARY SCHOOL DIPLOMA (E., *1st Class*:—Miss Evelyn Welsh.

2nd Class:—Misses Mary J. Flinn, Mary Stevenson, and Abbie A. Cleveland.

C. A. RICHARDSON,
Secretary.

—

QUEBEC (Protestant).

Session of August, 2nd, 1870.

ELEMENTARY SCHOOL DIPLOMA (E, *1st Class*:—Mr. Edward Thomas Chambers, ad Miss Fanny Cowan.

2nd Class:—Mr. Edward D. Criukshank and Miss Elixabeth Hall.

D. WILKIE,
Secretary.

—

Council of Public Instruction.

Regulations Concerning Books, with lists of the Books Approved by the Council of Public Instruction, for the use of Schools under the Control of School Commissioners and Trustees.

1. Section XXI, 4, Chap. 15 of the Consolidated Statutes provides that the *Council of Public Instruction, with the approval of the Lieut.-Governor in Council, shall select, or cause to be published, the Books, Maps, &c., to be used, to the exclusion of others, in the Schools of the School Commissioners and School Trustees*, due regard being had to the language, whether English or French, in which the tuition in the several schools is given; but this power of selection does not extend to that of books having reference to religion or morals.

2. Section LXV, 2, Chap. 15. Consol. Stat. provides that School Commissioners and School Trustees shall regulate the course of study in each school, and shall allow no other books to be used in the schools under their control than those approved and recommended by the Council of Public Instruction *but the Curé or Officiating Minister shall have the exclusive right of selecting the books having reference to religion and morals, for the use of schools for children of his own religious faith.*

3. The Council of Public Instruction, at a meeting held on Wednesday, Oct. 20th, 1869, adopted the following rules concerning books:

(1.) In future the books submitted for approval shall be simultaneously referred to both Committees of the Council (as reorganized conformably to the Act to amend the law respecting Education in this Province.)

(2.) If their approval be recommended by the two Committees, the books shall, accordingly, be approved by the Council, and it shall be stated, in the notice to be given, that they have been approved, on the recommendation of the two Committees, for the use of Catholic Schools and of Protestant Schools.

(3.) If their approval be recommended by only one of the two Committees, the books shall, in like manner, be approved by the Council, but mention shall be made that such approval has been given on the recommendation of the Catholic or of the Protestant Committee, and for the use of Catholic Schools or of Protestant Schools, as the case may be.

(4.) Persons desirous of submitting Books for the approval of the Council shall transmit (for the inspection of members of the two committees) twenty-five copies.

4. The following lists contain the titles, &c., of all books approved by the Council of Public Instruction to October 21st 1869.

I. Books approved previously to the re-organization of the Council of Public Instruction in 1869.

N. B. The letters (E.), (M.), (A.) denote that the books are approved for Elementary Schools, Model Schools and Academies, respectively.

The letters P. C. denote the books approved exclusively for Protestant or Catholic Schools.

THE FOUR SEASONS: Being a New No. 3, Nelson's School Series. (E.)

MURRAY'S SPELLING BOOK. (E.)

WORD-EXPOSITOR and Spelling Guide: a School Manual exhibiting the Spelling, Pronunciation, Meaning and Derivation of all the important and peculiar words in the English language; with copious exercises for Examination and Dictation. By George Coutie, M. A. 1813. (M.)

THE BRITISH AMERICAN READER; By Borthwick. (E.)

ARITHMETIC of the Irish National Series. Published by J. Lovell. (E.)

WALKINGHAM'S Arithmetic. (E.)

ELEMENTARY ARITHMETIC in Decimal Currency, designed for the use of Canadian Schools. By John Herbert Sangster. Second Edition, carefully revised; 1861, Published by John Lovell. (E.)

A COMPREHENSIVE SYSTEM of Book-Keeping, by Simple and Double Entry. By Thomas R. Johnson, Accountant, Montreal, 1864. (E. M.)

THE PRINCIPLES OF ENGLISH GRAMMAR. By W. Lennie; 1858. (E.)

ENGLISH WORD-BOOK: for the use of Schools: a Manual exhibiting the Structure and Etymology of English words By John Graham; 1863. (A.)

Lovell's GENERAL GEOGRAPHY; By J. G. Hodgins, LL. B., &c., Montreal, 1861. (E. M. A.)

HISTORY OF CANADA, for the use of Schools and Families; by J. Roy. Seventh Edition; 1864 (E. M.)

MODERN SCHOOL GEOGRAPHY and Atlas; By James Campbell. (E. M.)

A SCHOOL HISTORY of Canada and of the other British North American Provinces; By J. G. Hodgins. LL. B. (M. A.)

FIRST LESSONS in Scientific Agriculture. For schools, &c. By J. W. Dawson, LL D, &c., Montreal; 1864. (M. A.)

ANSWERS to the Programmes on Teaching and Agriculture: By Rev. J. Langevin. Second Edition.

ARITHMÉTIQUE DE BOUTHILLIER. *Publié par* MM. Crémazie (E.)

COURS D'ARITMÉTIQUE COMMERCIALE. *Imprimé chez* Eusèbe Senécal, Montréal. 1863. (M.)

COURS DE TENUE DES LIVRES *en partie double et en partie simple. Imprimé chez* Eusèbe Senécal, Montréal, 1861. (M.)

ABRÉGÉ DE LA GEOGRAPHIE MODERNE. *Publié par la Société d'Education de Québec.* (E.)

LA GÉOGRAPHIE MODERNE de M. Holmes. (M. A).

ABRÈGÉ DE L'HISTOIRE DU CANADA *de* M. F. X. Garneau. (E. M.)

GRAMMAIRE DE LHOMOND (*édition de Julien*), *et les Exercices sur la même.* (E.)

LA SÉRIE DES COURS DE GRAMMAIRE DE JULIEN *et les Exercices sur Icfeux* (M.)

PETIT TRAITÉ DE GRAMMAIRE ANGLAISE, *à l'usage des Ecoles primaires. Par* Charles Gosselin, Québec. (E.)

MANUEL D'ANGLAIS: *Grammaire et Thèmes. Par* P. Sadler, Paris, 1830. (E.)

MANUEL D'ANGLAIS, *Thèmes et Syntax. Par le même*, Paris, 1840. (E.)

GRAMMAIRE PRATIQUE DE LA LANGUE ANGLAISE. *Par le même*, Paris 1848. (M. A.)

COURS DE VERSIONS ANGLAISES. *Par le même.* (M. A.)

MANUEL CLASSIQUE DE CONVERSATIONS FRANÇAISES ET ANGLAISES. *Par le même.* (M. A.)

NOUVEAU DICTIONNAIRE *Portatif Anglais-Français et Français-Anglais. Par le même.* (M. A.)

PRÉCIS ELÉMENTAIRE D'HISTOIRE NATURELLE. *Par Zeller*; Paris, 1858. (M. A.)

TRAITÉ D'AGRICULTURE PRATIQUE. *Par* J. F. Perrault, Montréal, 1858. (E. M.)

DICTIONNAIRE CLASSIQUE DE BÉNARD. *Edition de* 1863. Paris.

RÉPONSES AUX PROGRAMMES DE PÉDAGOGIE ET D'AGRICULTURE. *Par* M. *l'Abbé* Langevin. *Seconde Edition.*

FIRST LATIN READER,—for the use of Schools. By A. H. Bryce. Fourth Edition; 1864. (A).

SECOND LATIN READER,—with Notes and a Copious Vocabulary. By A. H. Bryce; 1863 (A.)

FIRST GREEK READER,—for the use of schools; By A. H. Bryce. 1863. (A.)

GRAMMAIRE FRANÇAISE ÉLÉMENTAIRE. *Par* F. P. B. (E.)

TRAITÉ DE CALCUL *mental. Par* F. E. Juneau. (E. M.)

TRAITÉ ÉLÉMENTAIRE *d'Arithmétique. Par* F. X. Toussaint. (E. M.)

TENUE DES LIVRES *en partie double et en partie simple. Par* Napoléon Lacasse. (E. M.)

ELEMENTARY Latin Grammar. By Dr. Leonard Schmitz. Published by R. Chambers. (A.)

ELEMENTARY LATIN EXERCISES. By the same. Same Publisher. (A.)

GRAMMAR of the Latin Language. By the same. Same publisher. (A.)

ADVANCED Latin Exercises. By the same. Same Publisher. (A.)

SCHOOL DICTIONARY of the Latin language Published by Chambers. (A.)

TREATISE on Practical Mathematics. Published by the same. (A.)

LA GRAMMAIRE *Complète de Poitevin.* (M. A.)

TRAITÉ *d'Analogie grammaticale.* By the same. (M. A.)

TRAITÉ *d'Analogie logique.* By the same. (M. A.)

COURS *complet de Dictée.* By the same. (M. A.)

LE PREMIER *livre de l'Enfance.* By the same. (E.)

LA GRAMMAIRE *du Premier Age.* By the same. (E.)

LA GRAMMAIRE *élémentaire.* By the same. (E.)

COURS GRADUÉ. By the same.

MANUEL D'ANGLAIS. *Sixième partie: Leçons de Littérature Anglaise. Par* P. Sadler. Paris, 1841.

MANUEL D'ANGLAS. *Cinquième partie : Leçons de Littérature Anglaise. Par* P. Sadler. Paris, 1841.

MANUEL D'ANGLAIS. *Deuxième partie: Versions et Dialogues. Par* P. Sadler. *Nouvelle édition* Paris, 1857.

Exercices *Anglais, ou cours de Thèmes gradués. Par* P. Sadler. *Deuxième édition.* Paris, 1857.

THE DUTY of a Christian. Published by the Brothers of the Christian Schools. (E.) C.

THE METROPOLITAN Illustrated Speller. Published by D. & J. Sadlier & Co. New-York (E.) C.

THE METROPOLITAN Speller and Pictorial Definer. Published by the same. (E.) C.

THE METROPOLITAN First, Second and Third Readers. Published by the same. (E.) C.

THE METROPOLITAN Fourth Reader (Edition of 1866, for Canada). Same Publishers, Montreal. (E. M.) C.

LINGARD'S History of England, abridged : for the use of Schools. (E. M.) C.

LE DEVOIR DU CHRÉTIEN. *Publié par les Frères des Ecoles Chrétiennes.* (E.) C.

HISTOIRE SAINTE, *par demandes et par réponses ; suivie d'un abrégé de la Vie de N. S. Jésus-Christ ; à l'usage de la jeunesse.* Québec, 1852. *Imprimée chez* T. Cary. (E.) C.

HISTOIRE SAINTE ; *par* Drioux. *Publiée par* E. Belin, Paris. (E. M.) C.

HISTOIRE DE FRANCE ; *par le même.* (E. M.) C.

HISTOIRE D'ANGLETERRE, *par le même.* (E. M.) C.

PRÉCIS DE MITHOLOGIE, *par le même.* (M.) C.

HISTOIRE ANCIENNE, *par le même.* (M.) C.

HISTOIRE ECCLÉSIASTIQUE, *par le même.* (M.) C.

HISTOIRE DU MOYEN-AGE, *par le même* (M.) C.

NOUVELLE MÉTHODE *pour apprendre à bien lire. Par* J. E. Juneau.

THE CATHOLIC SCHOOL BOOK, containing easy and familiar Lessons for the Instruction of Youth. C.

NOUVELLE MÉTHODE D'ECRITURE. *Publié par* Eusèbe Senécal, *en sept cahiers.* Montréal. 1865 C.

PSAUTIER DE DAVID, *suivi des Hymnes qui se chantent dans les différents temps de l'année.* Mame, Tours, 1858. C.

PINNOCK'S Goldsmith's Catechism of the History of England, (E.) P.

PINNOCK'S Improved Edition of Goldsmith's History of England ; By W. Taylor, LL. D., Montreal, Lovell ; 1859. (M. A.) P.

GRAMMAIRE FRANÇAISE. By F. P. B. (E.)

LECTURES INSTRUCTIVES ET AMUSANTES *en manuscrit.* By F. P. B. (E.)

SYLLABAIRE for Elementary Schools only, by Messrs. Juneau and Lacasse, Québec, 1868. (E.)

TRAITÉ DE CHIMIE AGRICOLE, by Dr. Larue, Quebec, 1868. (E. M.)

TRAITÉ D'ANALYSE GRAMMATICALE, by Mr. Napoléon Lacasse, Quebec, 1867. (E. M.)

GRAMMAIRE DE BONNEAU ET LUCAT, revised by M. Michaud. (E. M.)

TRAITÉ DE L'ART ÉPISTOLAIRE, Sorel. (E. M.)

NOUVEAUX ÉLÉMENTS DE LA CIVILITÉ CHRÉTIENNE, for Elementary Schools only. C. Delagrave & Co., Paris (E.)

THE EDINGBURGH HIGH SCHOOL FRENCH GRAMMAR, by Charles Schneider, 1863. (M. A.)

THE EDINGBURGH FRENCH CONVERSATION READER, same, 1866. (M. A.)

THE EDINGBURGH HIGH SCHOOL FRENCH MANUAL, same, 1867. (M. A.)

ABRÉGÉ DE LA GRAMMAIRE FRANCAISE, tenth edition, by C. J. L. Lafrance, Quebec, 1867. (E. M.)

TRAITÉ ELÉMENTAIRE D'ARITHMÉTIQUE, by L. H. Bellerose, Montréal, 1867. (E. M.)

NOUVEAU COURS DE LANGUE ANGLAISE, on the plan of Ollendorf,—Beauchemin and Valois, Montreal, 1868. (E. M.)

FIRST BOOK for the use of Schools. Published by J. Lovell. (E.)

II. Books approved subsequently to the re-organization of the Council of Public Instruction in 1869.

DR. MILES'S NEW SERIES OF HISTORY OF CANADA, entitled :

1. *A New History of Canada*, 1534—1867, to serve as a general reader in Secondary or Superior Institutions. (A.) C. and P.

2. *A School History of Canada*, prepared for the Elementary and Model Schools. (E. M.) C. and P.

3. *The Child's History of Canada*, for the Elementary Schools. (E.) C. and P.

ELÉMENTS DE BOTANIQUE ET DE PHISIOLOGIE VÉGÉTALE, suivis d'une petite flore simple et facile de la Province de Québec par M. l'Abbé Ovide Brunet. (E. M. A.) C. and P.

HISTOIRE DU CANADA, à l'usage des maisons d'éducation, par le Rév. C. H. Laverdière, A. M. (E. M. A.) C. and P.

Extracted, by order of the Council, from the Register of Minutes of Meetings,

LOUIS GIARD.
HENRY H. MILES.
Secretaries of the Council of Public Instruction.

Quebec, August, 1870.

THE JOURNAL OF EDUCATION.

QUEBEC, (PROVINCE OF QUEBEC) OCTOBER, 1870.

Stewart's Quarterly Magazine. (1)

In acknowledging the receipt of No. 3, Vol. IV, of this magazine, it will not be deemed unseasonable to offer a few suggestions to our readers on the subject of periodical literature. To this, recourse is now had so extensively, as a source and vehicle of mental aliment, that parents, teachers, and other guides of youth, must feel embarrassed in making a selection, from among the periodicals presented to their notice, whether for themselves, or for those whose reading it may be their duty or their desire to regulate.

We believe that the magazines published within the limits of the Dominion are not yet what are styled "*paying concerns.*" But this, although discouraging to our writers, editors and publishers, must not be regarded as derogatory to the character of our home literature. For, with few exceptions, the imported periodicals which have enjoyed the greatest circulation amongst us are of an inferior stamp. They consist, to a great extent, of *trashy* articles, or of such as are not calculated to produce wholesome effects, owing to their ephemeral character, the absence of originality, of literary merit, or adaptation to the wants, sentiments, and aspirations of Canadian readers. We need not particularize. One need only glance at the numerous publications which figure every week or month in the shop windows, and on the counters of many of our booksellers. The conclusion would soon be arrived at that it is not wise, in the future interest of the Dominion, to have the taste for healthful reading amongst us dependent upon such cultivation as may be derived from those foreign sources. In purchasing them, we are at least not contributing to the support of our own manufactures, nor to the promotion of the various arts and occupations amongst ourselves which are necessary to the production of every book or periodical. In recommending them, whether by precept or example, to those with whom we have influence, and more especially to the young, we may be encouraging the growth of a morbid preference for sensational reading, to the exclusion of that which tends to nourish mental vigour and to fit our young men and young women for real usefulness as future citizens of the Dominion.

But, of the comparatively few magazines of Canadian origin which have hitherto made their appearance and attained to some circulation, it may be stated that none deal in the purely "*sensational.*" Such as are not devoted to special objects, as are the *Canadian Journal* of Toronto, and the *Canadian Naturalist* and *Geologist* of Montreal, without being deficient in interesting articles of the higher sort, usually furnish excellent reading, besides, both in prose and verse. The quality of the papers they contain on history, biography, travels, general

(1) October 1870. Geo. Stewart, Junior, Editor and Proprietor, St. John, N.-B.

literature, and the belles-lettres, or various branches of polite learning, such as rhetoric, criticism, and philology, proves that our own Dominion writers only need encouragement to enable them to place our local periodicals in the very highest rank of those we import from Great Britain, and the United States. And there is this (to ourselves) great additional recommendation in behalf of the Canadian Magazines that their contents are commonly better adapted to our own local wants, tastes and sentiments, and therefore more really interesting and profitable for Canadian readers.

In offering these observations, however, we should regret to be understood as expressing ourselves disparagingly of certain first class American periodicals which have found favour amongst us, or of the great British quarterlies and magazines, welcomed, wherever the English language is read, as models of the highest literary excellence and intellectual culture. On the contrary, our loss would be great if deprived of these. But, what we chiefly desire to inculcate in these remarks, is, the doctrine that we could well afford to spare the great majority of the imported periodicals, and that we should be great gainers in affording a more generous support to those of Canadian origin. Of *Stewart's Quarterly*, in particular, it may be affirmed that it merits all the aid which such an undertaking requires on the part of the lovers of good reading. We have yet had time only to glance at the contents of the number last issued—that for the present month. But we think that we shall find it not inferior to, but rather an improvement upon, its predecessors. It opens with a piece entitled: *Threnody*—that is, a song of lamentation—from the pen of a new, and, we believe, unknown writer, who has already delighted and astonished the readers of the *Quarterly* with remarkable displays of poetic genius under the nom-de-plume of "Enylla Allyne." There are also, in this number, three or four other articles of original poetry, including original translations in verse from Bion, Anacreon, and Horace, besides the illustrative selections from Pope, Shakespeare, &c., which are presented in the papers styled, "Man the Worker" "Sketch of English Literature," "The Bard of Avon," "Obituary Notices" and "Immature Genius." The "Sketch of English Literature" is the last but one of a series of admirable articles on that subject, beginning with the earliest English writers and continued to the times of Hume, Gibbon, Robertson, Burke, and Henry McKenzie. We know not where else there could be found so lucid, interesting, and altogether valuable a summary of the history and progress of English Literature as this series furnishes, setting forth the characteristics of the several epochs in a brief but happy manner, and illustrated by comments and selections from the standard authors.

We have not space for making remarks upon each one of the articles contained in this number of the *Quarterly*. We may say, however, that there is variety enough to render it attractive to all classes of readers. "The Pot of Gold" "Tom Donlan" "Storm-stayed, and the Story which grew out of it," and "François de Bienville" will please the lovers of romance. To those of a more practical turn, "Man the Worker" and a seasonable article on "The Census" will prove very acceptable, while "Pen Photographs," "Obituary Notices," "Bach and Handel" "Delissierisms"—the last named treating of the causes and effects of Earthquakes, the Tidal Wave, Total Eclipses and the Aurora Borealis—cannot fail to amuse and instruct readers generally. This, like former numbers of the magazine, closes with succinct notices of new works.

Apart from the intrinsic merit, and seasonable character of the articles presented in this and in preceding numbers of *Stewart's Quarterly Magazine*, two principal features must be adverted to—one being its cheapness, which placesit with in the reach of all readers, the cost being only one dollar a year. The other is the fact that its contents not only consist of original articles, but these are furnished by Canadian writers, resident in different part of the Dominion. In the last named reason, bearing in mind what the ablest writers of other countries have contributed towards the growth and consolidation of national interests in literature and science, as well as those of a material nature, all thoughtful well-wishers of our recently inaugurated Confederation will recognize a good motive for furthering the circulation of an excellent periodical, and an adequate excuse, if any be required, for devoting some space to its merits in this Journal of Education.

Death of His Grace the Archbishop of Quebec.

The venerable Archbishop of Quebec yesterday evening (Oct. 14.) reached the goal of his earthly existence at the ripe age of 72. He had latterly filled a place in the public mind more prominent than usual on account of the painful illness by which he was affected. He returned from Rome, whose Ecumenical Council he all along attended, in May last, in delicate health, suffering, we believe, from that malady which was to assume a fatal form a few months later. His return home was warmly welcomed by his extensive flock, and regarded with more than passing interest by men of other denominations. This fact leads naturally to the consideration of his personal qualities and popularity. Though even to persons of another faith, like ourselves, the duty of recording the Archbishop's death is a painful one, it is yet a pleasant duty to bear cheerful testimony to his mild, kindly, liberal and paternal character—to amiable and excellent qualities—such as never fail to bridge over the differences of faith, in social intercourse, and endear a man to his fellows, of whatever creed. Some men like the lamented deceased and the noble Archbishop of Halifax can cultivate the virtue of tolerant silence or theologic reserve, to the extent of avoiding offence to the susceptibilities of their separated brethren. Such men prefer to exhibit the points of agreement with their neighbours, to those of disagreement; and to show that, though not one in all the articles of faith, they may be one in the spirit of Christian love and in self-devotion to humanity's worthiest calls. The deceased bore the reputation of a good theologian and a scholar, though not a great preacher. Gifts of head, enough, he had; but who would not prefer to remember a man by his gifts of heart—by those endowments and impulses which flow from the purest the highest spring to which humanity has access? These are at once the loveliest and the strongest ties by which society is held together—the influences which banish the vile dross of selfishness, and display, in the most attractive brilliancy, the truest metal of our kind. It is a maxim of universal acceptance, that no man's merits are fully recognized till he is dead. Then the great gap made by his departure is seen in all its startling extent. But it is something for the living to be proud of when men, occupying a position like the late Archbishop, in mixed communities, succeed in gaining besides the esteem of their own denomination, the respect of those belonging to its rivals. The deceased, after a long, laborious and useful life, has passed away with such laurels on his brow, amid the deep grief of a multitude of friends and the sincere regrets of a whole community.

The following particulars of his long eventful career will be read with melancholy interest:

The Most Reverend Charles François Baillargeon, fifteenth Bishop and third Archbishop of Quebec, was born at Isle aux Grues, on the 25th of April, 1798, and ordained Priest on the 1st of June, 1822, by Bishop Plessis. He was first appointed Chaplain to the Church of St. Roch, and subsequently in 1826 *Curé* of the Parish of St. François, Island of Orleans, and in 1827 to the charge of the Parishes of l'Ange Gardien and Chateau Richer. In 1831 he was appointed *Curé* of Quebec, and during his incumbency was sent to Rome as the Agent of the Archbishop and Bishops of the Province. Elected in 1850, during his sojourn there, Coadjutor to the Archbishop of Quebec, he received the Bulls comfirming his appointment on the 14th of January, 1851, and was consecratedon the 23rd, of February following, under the title of Bishop of Tloa, *in partibus infidelium*, by Cardinal Fran-

coni, Prefect of the Propaganda, assisted by the late distinguished Archbishop of New York, Dr. Hughes, and Doctor de Mazenod, Bishop of Marseilles. Returning to Quebec on the 1st of June, 1851, he was appointed Administrator of the Archdiocese on the 11th of April, 1855, and the late Archbishop Turgeon, having departed this life on the 25th of August, 1867, Dr. Baillargeon took possession of the Archiepiscopal See of Quebec on the 28th of the same month, and on the 2nd of February, 1868, received the *pallium*, the insignia of Archiepiscopal authority, which was forwarded from Rome, by the hands of Doctor Larocque, Bishop of St. Hyacinthe. In 1862, he made a second journey to Rome for the purpose of assisting at the canonization of the Japanese Martyrs, and was on this occasion named Assistant at the Pontifical Throne, and received the title of Roman Count from Pope Pius IX. His last visit to the Eternal City was undertaken about this time twelvemonth, to attend the Ecumenical Council, whence he returned in the month of May last.—*Quebec Chronicle.*

How a Successor is named.

—The decrees of the Quebec Provincial Council now in force provide that the choice of a new Bishop in a Catholic diocese is to be made in this wise : The deceased Bishop should leave two letters, each of which is to contain the names of three persons whom he believes worthy of filling the episcopate. Immediately upon the death of a bishop, one of these letters is to be sent to the oldest Bishop of the Province and the other to the Bishop nearest the vacant See. Both are to make known the contents of the letters to their fellow Bishops and all the Bishops are to choose the successor to the deceased Bishop from among the names that he has designated. The choice ordinarily falls upon the one named first in order by the deceased prelate. The Bishops announce their choice to the Holy See, whence Bulls are sent to the new Bishop.

Books and Current Exchanges Received.

The Western Educational Review, Official Organ of the State Board of Education of Missouri, September, 1870.

Hereafter, nothing but original articles will appear in the pages of the *Review* Writers have been secured for every branch of literature. Those who subscribe now for the next volume will receive the remaining numbers of this, without extra charge All communications should be addressed to E. F. Hobart and Co., Publisher, 704 Chesnut St. St. Louis, Mo.

Appletons' Journal, for November, 12, 1870.

Trübner's American and Oriental Literary Record, September 26th, 1870.

The Minnesota Teacher and Journal of Education, organ of the Department of Public Instruction and State Teachers' Association, October, 1870.

The Schoolmaster, October, 1870, only $1.00 per annum, single number 10 cents.

The Rhode Island Schoolmaster, October, 1870.

The National Teacher, a Monthly Educational Journal, October, 1870, No. 1, vol. 1. Terms: $1 50 per annum in advance. E. E. White, Editor and Publisher, Columbus, Ohio.

This Magazine, as a portion of its title imports, is a National Edition of the *Ohio Educational Monthly*, and when we inform our Readers that it will contain the same contributions, editorials, and book notices as the *Monthly*, it is saying enough, as the latter has long ranked amongst the foremost of its class.

The California Teacher, a Journal of School and Home Education, and Official Organ of the Department of Public Instruction, October, 1870.

The Massachusetts Teacher, a Journal of School and Home Education, October, 1870.

Littel's Living Age, No. 1370.

To those who wish to keep well informed in European politics we would recommend the *Living Age*, which, by its extracts from the leading foreign magazines, presents in a small compass all that is really valuable.

The present number contains a thoughful, temperate and well written article from the *Economist*, entitled : " Do the conditions requisite for a stable Government exist in France ? " It will repay perusal.

Whitney's Musical Guest, October, 1870.

This number, which closes vol. 3, contains two choice songs and one instrumental piece. It also presents to its many readers a new and elegant Premium List, offering great inducements to canvassers for subscribers. The *Guest* is neat in appearance and contains much valuable reading besides from $12.00 to $15.00 worth (retail price) of choice music in every volume.

Terms : $1.00 per annum, Specimen copies 10 cents. Canada subscribers must send 12 cents extra to prepay postage. Address, W. W. Whitney, Toledo, Ohio.

Arkansas Journal of Education, October, 1870.

The Illinois Teacher, devoted to Education, Science and Free Schools, October, 1870.

Ohio Educational Monthly, a Western School Journal, October, 1870.

The Manufacturer and Builder, October, 1870.

Hitchcock's Monthly Magazine of choice Music, Art Notes and Select Reading for the Family Circle for October, 1870, contains, besides seven pages of letter-press—" Norah O'Neill's Reply"—Song by Dr. W. J. Wetmore. " The Reaper and the Flowers" — Song by Blockley. " Eugenie Waltz" and " Malibran Polka " Every lady should become a subcriber. It is published by Benjamin W. Hitchcock, 24 Beekman St. New-York, at $3.00 per year in advance. Specimen copies mailed on receipt of 25 cents each.

Peters' Musical Monthly, for October, contains the following choice collection of Music, printed from full-size music plates :—

" Truly Yours"—Song and Chorus, by Hays. " Papa, come help me across the Dark River"—Song and Chorus, by Persley. " The World is full of Beauty when the Heart is full of Love"—Song, by Von Smit. " Eyes of Loving, Laughing Blue"—Song and Chorus, by Philip Phillips. " We won't leave the Farm"—Song and Chorus, by Persley. " Cast thy Burden upon the Lord"—Quartet. " Jesus and the Children"—Quartet. " Speak the Truth"— Quartet. " Halte Militaire or Camp Polka." " Falling Leaves Polka." " Christine Nilsson's Favorite Schottische" and " Floating Breezes Valse Sentimental."

This Magazine is invaluable to lovers of Music, any single piece of the above being worth as much as is asked for the entire lot. It is published monthly by J. L. Peters, 599 Broadway, New-York, at $3.00 per year. Sample copies mailed on receipt of thirty cents.

The Technologist, especially devoted to Engineering, Manufacturing and Building, November, 1870. Only $2.00 per year. Single numbers 10 cents.

The Weekly Spirit of the Times and Northampton Educator, October 29, 1870.

American Educational Monthly, devoted to Popular Instruction and Literature, November. 1870. Published by J. W. Schermerhorn and Co., 14 Bond St., New-York. $1.50 per annum.

The Nursery, a Monthly Magazine for Youngest Readers, October, 1870. John L. Shorey, 36 Bloomfield St., Boston.

Report upon the Inspection of Protestant Schools of Newfoundland for the year 1869.

Annual Announcement of the Cincinnati College of Medicine and Surgery for the year 1870–71.

The Young Crusader, November, 1870.

We can confidently recommend this Monthly as containing instructive and moral reading.

Old and New, for September, October and November 1870, Vol. II. Nos. 3, 4 and 5. Published by Roberts Brothers. 143 Washington St., Boston, —and Sampson Low, Son, and Marston, London.

These are the first numbers we have received of this monthly. Judging by the contents, for we have not had time to read the work, the articles are numerous varied and interesting.

The Rapid Writer, (Quarterly devoted, primarily, to the introduction of Phonetic Short-hand. Vol. 1, No. 5, October, 1870.

The Maine Journal of Education, October, 1870.

Journal of Education, Province of Ontario, October, 1870.

The Michigan Teacher, October, 1870.

The National Normal, October 1870.

Scribner's Monthly and Illustrated Magazine, for the people, November, 1870. Vol. 1. No. 1. Can only acknowledge receipt with thanks in this number.

Kansas Educational Journal, the organ of the State Teachers' Association, October, 1870.

New-York : D Appleton & Co , Cornell's Physical Geography, accompanied with nineteen pages of Maps and one hundred and thirty Diagrams and Pictorial Illustrations, embracing a detailed description of the United States.

In this treatise the author has considered in twelve chapters, the Structure of the Earth ; Continents and Islands ; Lowlands, Plateaus, and Mountains ; Volcanoes and Earthquakes; the Ocean ; Inland Waters ; the Atmosphere ; the Vegetable Kingdom ; the Animal Kingdom ; Man ; Useful Products, Mineral, Vegetable and Animal ; and the Physical Features of the United States in detail.

A primary endeavor of the author has been to make the book attractive to the learner, in the accomplishment of which he has avoided the dry statistical style common to similar text-books, and presented nature in as striking a manner as possible. The style is rigidly condensed, the author having present to his mind, that the subject-matter of the volume necessarily embracing a variety of objects, there is no room to spare in unnecessary words. In the selection of matter, trivial details have been omitted and leading facts and general principles have been made to stand out in bold relief. The publishers have shown their usual liberality and taste in bringing out the work. Diagrams and pictorial illustrations have been introduced wherever it was thought they could be of service in

elucidating the text; and Maps which speak for themselves, have been provided to delineate every important branch of the subject.

CALENDAR OF STATE NORMAL SCHOOL, Emporia, Kansas.

This Institution was opened in February 1865 and is maintained by the State of Kansas, for the education of Male and Female Teachers for the Public Schools of the Common Wealth. Students are admitted from all parts of the State and other States on the same condition, viz: that they intend to become teachers in the common schools of Kansas. There are three Departments,—1. The Teachers' Department,—2 The Preparatory Department,—3 The Model School. For admission, Male applicants to be 17 years of age, Females 16. Students are at no expense for *Text-Books*.

Tuition is *free* for all Teachers and those who design to teach. Other students pay $8 per term.

Our thanks are due Messrs. J.-B. Rolland et Fils, Montreal, for a copy of "*Nouvel Abrégé de Géographie Moderne*," à l'usage de la jeunesse, par l'abbé Holmes, septième édition, entièrement revue, corrigée et considérablement augmentée par l'Abbé L. O. Gauthier, Professeur d'Histoire de Québec;

Also to M. A. N. Montpetit for a copy of "*Abrégé de Géographie Moderne*" à l'usage de la jeunesse d'après une nouvelle méthode raisonnée, par Montpetit et Devisme.

MISCELLANY.

Education.

— In the House of Commons, July 28th, on the vote of £64,721 for public education in Great Britain,

Mr. FORSTER said this year the education estimate was £914,721, being a net increase over last year of £74,010. The increase arose from two causes—an increase in the annual grants, and in the sum granted to training schools. There was in the building grants a decrease of £3000. As regarded Scotland there was an increase of £6300 owing to the certificated masters having increased by 37, the certificated schoolmistresses by 45, and the pupil teachers by 308, The increase in annual grants for England and Wales was £34,732. which being solely owing to an increase in the number of scholars he did not think the committee would grudge. In 1870 the number of day scholars in attendance was estimated at 1,082,000, while last year the numbers were close upon 1,200,000. The evening schools had increased close upon 8000, bringing the total number up to 80,000. The capitation grant was one penny less than what he asked last year, being 9s. 10d. as against 9s. 11d. Last year there was no increase in training schools, but this year he aked for an increase of £14,000, and considering the demand that there would be for teachers he was not sorry to be obliged to ask it. This year there were 233 male students in residence at the training schools and 114 more females than last. The value which the country received for its money would be seen from a few statistics. At the 31st of August, 1869, the number of schools assisted by government grants was 7845 day schools and 2240 evening schools, and these schools provided accommodation for 1,766,000 scholars there being on the school lists 1,570,000 whilst the average number in attendance was 1,000,063 in the day schools, and 64,000 in the evening schools. The number of certified teachers was 11,752, assisted by 12,357 pupil-teachers and 1233 assistant teachers. As regarded the cost of the schools, £469,944 was defrayed out of the government grants, £455,017 out of the school fees, and £428,513 out of endowments and subscriptions. That was the annual cost, but did not include that of inspection and building grants. Of the number of children who passed without faillure the examination in reading, writing, and arithmetic, there were 470,000 in the day schools and 43,000 in the night schools The per-centage of the former, who passed without failure was 65.5, and in the night schools. The percentage was greater in the previous year. The number of children on the registers had increased 8 per cent., as against 7 cent. last year, and the attendance had increased 8¾ as against 7⅛ last year. There had in fact been a much larger increase of scholars than of the population. The number who passed through the examination was 9 per cent. as against 8 last year. Regarding the training schools he might state that they were capable of holding 3261 students, and there were now in them 2000, being an increase of 327 this year. That number would enable the education department to turn out at next Christmas of teachers trained for two years no less than 1122, and at Christmas, 1871, as many as 1478. At last August there were in all 14,074 certificated teachers, and to keep up the requisite number 980 would have to be annually supplied. As regarded the pupil-teachers he had the most uncouraging facts to lay before the committee. At Christmas, 1861, the number admitted was only 3092, whereas in 1869 they were no less than 4031. These were facts which spoke for themselves, and he would not trouble the committee with any comments upon them.—*Papers for the Schoolmaster.*

Literature.

—*Literary Exhaustion.*—It appears to me that I never meet anybody who is not as like as possible to every body else; that I never read an argument which has not been so hackneyed, that both the argument itself and the answer to it. and the rejoinder to the answer, are all so many foregone conclusions; and that even the most original of men often seem to be people with a diseased appetite for novelty, but whose essential likeness to the rest is manifest even in their superficial eccentricity. And, therefore—though I do not go so far as the gentleman who committed suicide, simply because he found it dull—I refrain from writing novels. But I know one or two people with whom all this is inverted. The world is to them a perpetual surprise. They never get into a railway-carriage without meeting somebody of altogether new and amazing character; they can scarcely take a constitutional without meeting an adventure; they can't listen to a couple of stockbrokers discussing the price of the funds without seeing something amazingly humorous in this unprecedented combination. The world to me, and, I fancy, to a large majority of us, is of a uniform dingy whitey-brown. To them it is full of sparkling and ever-varying colour, with dazzling light and gloomy shades, and infinite complexity of detail. Each new acquaintance presents some interesting psychological problem, and every bit of gossip affords them whole volumes of sympathetic speculation. I suppose it is that I am one of the crowd, and observe nothing strange about the walkers who are walking in the same path with me. More fortunate persons are moving, as it were, in a direction transverse to the general current, and are startled at every moment by the shock of somebody moving in a diverging line. Whatever the cause, there can be no happier endowment; and I envy, without being able to share, the never-failing pleasure which it excites in its fortunate possessors. Now, these persons are the born novelists. It is their function to convey to our humdrum and prosaic minds some glimpse of the freshness and the splendour continually present to them. Under their enchantment we can for a few moments see the world, as though we had just dropped from another planet, and everything had the charm of complete newness. No one can forget the first occasion on which he saw a foreign country, and how infinitely more foreign it looked than it has ever since appeared. The born novelist has the gift of preserving this freshness till comparatively late in life, and in regard not only to foreign countries but even to this monotonous and colourless place in which we pass our days. But though an essential element of great power, this is not the only qualification necessary. A man's early writings probably express the surprise and the delight, or the indignation, of a youth just entering the world, and discovering how different it is to his preconceived impressions. They have, it may be, the contagion of exuberant animal spirits, and remind us of the delight of a lively child when first taken to the play. If this is the only secret, a writer's power must decline as he grows older. The mere frank, unsophisticated surprise will go off, and the freshness will disappear with it, unless he has some more solid superstratum of talent. In fact, his interest in the world will only be permanent if he has powers of reflection as well as observation, and a keen and vigorous intellect capable of always developing new causes for animated inquiry. This was, no doubt, the case with the great men I have mentioned. There is really enduring substance in their writings, because the intelligent interest of a grown man has succeeded to the simple surprise of the boy. No doubt, as Wordsworth tells us, something of "the glory and the dream" has disappeared; the vision which still attended the youth has faded into the light of common day; but the loss is not without compensation, if the mind has grown more powerful, though it may be less flexible and less easily impressionable. The greatest works will probably be those of men who have lived long enough to have been taught to sympathize by many sufferings, and to learn to look for something more than the mere superficial glitter which attracts us early in life. Cervantes would not have written "Don Quixote" without the bitter influence of a long and unfortunate life. —*Cornhill Magazine.*

—The *Newspaper Press Directory* for 1870 contains a comparison of the present position of the newspaper press with what it was in 1846. In that year there were published in the United Kingdom 551 journals; of these 14 were issued daily—viz: 12 in England and 2 in Ireland. In 1870 there are 1390 papers, of which 99 are issued daily. The magazines in course of publication, including the quarterly reviews, number 626, of which 251 are of a decidedly religious character.

Meteorology.

—From the Records of the Montreal Observatory, Lat. 45°31 North; Long, 4h. 51m. 11 sec. West of Greenwich, and 182 feet above mean sea level,—for September, 1870,—by Chas. Smallwood, M.D., LL.D., D.C.L.

DAYS	Barometer corrected at 32°			Temperature of the Air.			Direction of Wind.			Miles in 24 hours.
	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.	
1	30.071	30.050	30.011	60.2	80.2	70.0	W	W	W	209.21
2	.026	.011	29 947	61.1	71.1	67.0	N E	N E	N E	142.10
3	29.947	29 912	.860	61.1	67.2	64 1	N E	N E	N E	97.21
4	.650	.637	.709	60.2	67.0	61.1	N E	S W	W	109 21
5	.875	997	30.022	56 0	75.0	58.1	W	W	W	234.10
6	30.151	30 204	.261	50.1	77.2	59.7	W	W	W	171.11
7	.300	.332	.331	53.7	77.3	61 0	W	N E	wbyN	104.00
8	.412	.370	.300	53.2	76.7	62.2	E	N E	N E	77.24
9	.199	.097	.061	69 1	76 3	67.2	N E	S W	S W	109.18
10	·121	.224	.237	57.8	71.7	55.0	N E	N E	N E	221.14
11	.251	.258	.250	46.0	70.1	57.6	N	N	N by E	114 12
12	.322	·320	.316	47.2	70.2	59.0	N	W	W	94 29
13	.321	.324	.311	54.1	82.3	63.4	W	W S W	W	101.12
14	322	.304	.271	60.1	85 1	72.0	W	W S W	W	91.11
15	112	.009	.000	62 1	81.2	68.1	W	W S W	W	104.12
16	.201	.247	.288	54.6	71.1	58.0	N E	N E	N E	212 44
17	300	.295	.261	54.6	68 5	67.1	N E	N E	N E	141 00
18	.182	.125	.199	58.4	86.7	56.2	N E	N E	N E	291 06
19	.261	.260	.251	49 4	81.1	60.0	N E	W	W	87.74
20	.378	.402	.411	55 0	82.4	60.2	W	N E	N E	114.10
21	.425	.411	.380	52.2	79 9	67.3	N E	S	W	97.21
22	349	.302	.175	58 0	82.3	68.1	W	S W	S W	101.44
23	0 20	.019	.031	64.0	82.0	60 0	W	W	N E	209.00
24	.017	.008	.000	53.4	68.1	63.1	N E	N E	N E	114.21
25	.063	.050	.121	56.2	63.0	60.2	N E	W	W	90.12
26	.250	.199	.148	62 1	69.2	51 7	W	W	W	101.00
27	.062	.071	.075	86 2	66.0	57.1	W	W	W	211.11
28	.181	.180	.178	45.9	61 7	54.0	W	N E	N E	271.12
29	.250	.212	.210	49.6	76.2	60.0	N E	E	N E	100 91
30	.249	.116	.097	59.3	74.7	57.2	W	S W	S	94.10

The highest reading of the Barometer was on the 21st day, and indicated 30.425 inches. The lowest was on the 4th day, and was 29.637, giving a monthly range of 0.788 inches. The highest temperature was on the 18th day, and was 85° 7. The lowest was on the 11th day, and was 45° 1. The mean temperature of the month was 63° 83, which is 5° 33 higher than the *Isotherm* for Montreal. Rain fell on 12 days, amounting to 2.263 inches, and was accompanied by thunder and lightning on three days. First frost of Autumn was on the 6th day.

—Meteorological Observations taken at Quebec, during the month of September, 1870; by Sergt. John Thurling, A. H. Corps, Quebec.

Barometer, highest reading was on the 8th	30.261	inches.
,, lowest ,, 17th	29 424	
,, range of pressure	0.837	
,, mean for month reduced to 32°	29.820	
Thermometer, highest in shade on the 14th	79.2	degrees.
,, lowest ,, 28th	36 3	
,, range in month	42.9	
,, mean of highest	67.9	
,, mean of lowest	47.7	
,, mean daily range	20 2	
,, mean for month	57 8	
,, maximum in sun's rays (black bulb)	126 0	
,, minimum on grass	38 5	
Hygrometer mean of dry bulb	59 5	
,, ,, wet bulb	53.7	
,, ,, dew point	48 6	
,, elastic force of vapour	.343	
,, weight of vapour in a cubic foot of air	3 8	grains.
,, weight required to saturate, do	1.8	
,, the figure of humidity, (Sat. 100)	68	
,, average weight of a cubic foot of air	531.9	
Wind, mean direction of ,, North	7 00	days.
,, ,, ,, ,, East	6 50	
,, ,, ,, ,, South	4.00	
,, ,, ,, ,, West	11.50	
,, ,, ,, ,, Calm	1 00	
,, ,, force by estimation 0-12	1.8	
,, ,, daily horizontal movement	120.6	miles.
Cloud, mean amount of	5.7	
Ozone ,, ,,	2.9	
Rain No. of days it fell	8	days.
Amount collected	2.40	inches.

PRINTED BY EUSÈBE SENÉCAL, MONTREAL.