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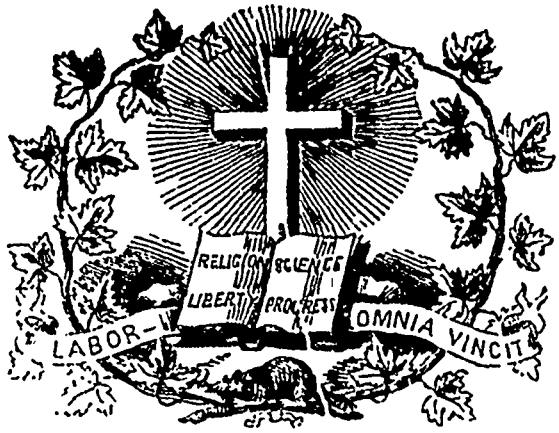

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LITERATURE.

POETRY.

JACQUES CARTIER.

BY THE HON. T. D. M'GEE.

In the sea-port of St. Malo, 'twas a smiling morn in May,
When the Commodore Jacques Cartier to the westward sailed away;
In the crowded old cathedral all the town were on their knees
For the safe return of kinsmen from undiscovered seas;
And every autumn blast that swept o'er pinnacle and pier
Filled manly hearts with sorrow, and gentle hearts with fear.

A year passed o'er St. Malo—again came round the day
When the Commodore Jacques Cartier to the westward sailed away;
But no tidings from the absent had come the way they went,
And tearful were the vigils that many a maiden spent;
And manly hearts were filled with gloom, and gentle hearts with fear,
When no tidings came from Cartier at the closing of the year.

But the earth is as the Future, it hath its hidden side,
And the Captain of St. Malo was rejoicing in his pride
In the forests of the North—while his townsmen mourned his loss,
He was rearing on Mount-Royal the *fleur-de-lis* and cross;
And when two months were over, and added to the year,
St. Malo hailed him home again, cheer answering to cheer.

He told them of a region, hard, iron-bound, and cold,
Nor seas of pearls abounded, nor mines of shining gold;
Where the wind from Thule freezes the word upon the lip,
And the ice in spring comes sailing athwart the early ship.
He told them of the frozen scene until they thrill'd with fear,
And piled fresh fuel on the hearth to make them better cheer.

But when he chang'd the strain—he told how soon is cast
In early spring the fetters that hold the waters fast;
How the winter causeway broken is drifted out to sea,
And the rills and rivers sing with pride the anthem of the free;
How the magic wand of summer clad the landscape to the eyes,
Like the dry bones of the just, when they wake in Paradise.

He told them of the Algonquin braves—the hunters of the wild,
Of how the Indian mother in the forest rocks her infant child;
Of how, poor souls, they fancy in every living thing
A spirit good or evil that claims their worshipping;
Of how they brought their sick and maimed for him to breathe upon,
And of the wonders wrought for them through the Gospel of St. John.

He told them of the river, whose mighty current gave
Its freshness for a hundred leagues to ocean's briny wave.
He told them of the glorious scene presented to his sight,
What time he reared the cross and crown on Hochelaga's height,
And of the fortress cliff that keeps of Canada the key,
And they welcomed back Jacques Cartier from perils over sea.

CANADIAN HISTORY.

Jacques Cartier.

The reverence of Canada, and the respect of France, have of late invested with a new interest the mariner of St. Malo, who gave a name to the St. Lawrence, which he ascended to its rapids. He stands forward, indeed, as a man of high principle, sound judgement, adventurous enterprise, and tarnished only by his unjust carrying off of the Canadian chiefs to France. But even in this there was not the incentive of gain; he did not take them to make them slaves, as Leon Ayllon, and other Spanish adventurers did. If Cartier did not return with them as he proposed, we know not what obstacles prevented him, but we do know that there is nothing but what tends to show that the Americains were to their latest breath treated with kindness and as free men.

Antiquarian research tells us that his grandfather, John Cartier, was born in 1428, married Guillemette Baudoin in November, 1457, and had five sons, all of whom are represented in our day. The eldest of these, Jacques or James Cartier, born at St. Malo, Dec. 4, 1458, married Geseline Jansart, and had three sons, the youngest of whom, named after himself, made the name famous at home and abroad, and is one of the glories of that old French town.

Jacques Cartier was born in December, 1494, propably on the last day of the year, when he was carried to the church of St. Malo to receive baptism. Men had but for a twelvemonth wondered then over the discovery of that New World to which his name was to be indissolubly connected. Of his early life we find few traces. In 1518, he appears on the parish register as godfather of a cousin, and the next year leads to the altar (May 2, 1519) Marie Katherine des Granches, daughter of Monsieur Honoré des Granches, knight and constable of St. Malo. Young Cartier had already, it would seem, made his mark.

His marriage was a brilliant one, and he must have stood well in the world's esteem to have won a maiden so well connected, but Cartier was already at the age of 28, master pilot of the port of St. Malo.

Of his wanderings on the Ocean during his earlier years we know nothing, although there are indications that he had visited the coast of America prior to his expedition in 1534. He had in all probability often cast his lines, with the hardy fishermen of northern France, amid the cod that swarmed on the banks of Newfoundland, and was selected for his enterprise by Philippe de Chabot, the Admiral of France, to conduct the exploring expedition sent out by Francis I. in 1534.

Ten years had now elapsed since the voyage of Verrazzano, and while Spain had been rapidly extending her power in the New World, France had in no way availed herself of the discoveries made under her flag. Yet she had explored, and might claim as her own, a port at which the commerce of the new-found continent was one day to centre, and where in less than three centuries a city rivalling in population the greatest in the world was to exert on the globe its influence. France was represented on the western side of the Atlantic only by her hardy fishermen of Britanny and Normandy, no doubt the earliest discovers of the continent, whose labors found no chronicler.

It was indeed time for France to act, but the expedition planned by Chabot disregarded the information acquired by Verrazzano, if we are indeed to regard the account of that Florentine's voyage as real. It was not to settle in NewYork bay or establish a trading post or colony there; nor was it to explore the country to the north or south for a better location. It was simply to discover a nothern passage to China and Japan—to seek what Sir John Franklin has perished in search of in our day.

Had France but followed up her previous discoveries, by settling the Bay of NewYork, and then occupied the St. Lawrence and the country of the Abnakis, how different would the world's history have been!

The French expedition of 1534, under Jacques Cartier, consisted of two vessels of sixty tons each, and carried sixty-one men in all. Cartier sailed from St. Malo on the 30th of April, and on the 10th of May made Cape Bonavista, but finding too much ice there, ran into Catalina, which has changed into Spanish the French name of the saint he gave it. He then coasted along Newfoundland to the Straits of Belleisle, visited the port of Brador, and the bay of Brest, from which he proceeded in boats to Checateca. Returning to Newfoundland, he made the isles of Brion and Magdelaine, and on the 3rd of July entered a bay which still bears the name given by Cartier in consequence of the excessive heat. Proceeding next to Gaspé Bay, he planted a cross among the Micmacs on the 24th of July, and taking two of the natives on board, Taiguragny and Domagaya, sons of the chief, at last, though without being aware of it, entered one of the arms of the St. Lawrence. After visiting the isle Natiscotec, or Anticosti, Mont Joly and the river Nataskouan, he sailed back, reaching St. Malo on the 5th of September, after experiencing a severe storm.

Of this voyage of Cartier, no contemporary French account is known. Ramusio in 1556, published an Italian version of a narrative in his hands, and this account, re-translated into French, was printed at Rouen in 1598.

This voyage had added little to the knowledge already acquired from the fishermen whom he found at almost every point, still it added to the fame of Cartier and won him favor.

Charles de Mouz, Sieur de la Melleraye, Vice-Admiral of France, took the matter of American discovery to heart. A commission was issued to Cartier on the 31st of October, 1534, styling him Captain and MasterPilot of St. Malo, "to lead, conduct and employ three vessels, each equipped and provisioned for fifteen months, to conclude the voyage already by him begun to discover beyond the Newfoundlands." His three vessels—the Grande Hermine of 120 tons, the Petite Hermine of 60 tons (commanded by his brother-in-law Macé Jalobert), and the Emerillon of 40 tons—were ready in May, 1535. On the 16th of that month, the feast of Whitsunday, Cartier and his companions, after approaching the sacrements reverently in the Cathedral of St. Malo, received the episcopal benediction of Francis Bohier, Bishop of St. Malo and on the 19th set sail, bearing back the two Micmac youth. On the 26th of July they reached Blanc Sablon in the straits of Belleisle, after having been scattered by a storm. Pushing on his explorations, Cartier entered St. Genevieve Bay on the 7th of August, Anticosti on the 15th, and by the 1st of September, was at the mouth of the deep Saguenay. Still ascending the St. Lawrence he came to the St. Charles to which from the day of its discovery he gave the name of St. Croix. Here, on the site of modern Quebec, between Fabrique Street and the Coteau St. Genevieve, then stood the bark village of Stadaconé, the town of Donnacona, with its fields of maize and squashes. Like all the tribes below them, the people were apparently Montagnais, for the Micmacs of Gaspé served as interpreters.

After cultivating friendly relations here, Cartier, leaving the Great and little Hermine laid up, ascended the river in the Emerillon, in spite of the efforts of Donnacona and the people of Stadaconé to deter him. At La Pointe du Platon, the present St. Croix, fifteen leagues above Quebec, he found the Village of Achelaiy, or Ochelai, and leaving the Emerillon at the mouth of the Sorel he continued his exploration in boats, arriving on the 2nd October at Hochelaga, a palisaded town at the foot of the Mountain of Montreal. The inhabitants were evidently a different family from the Algonquins below: the town as described by Cartier, their sedentary life, the words of their language which he has preserved, all show them to be of that Huron Iroquois family who everywhere ruled the Algonquins. The chief styled Agouhanna (evidently the Agoyander of later writers), with his people, received Cartier and his Companions with every mark of friendship.

From the mountain Cartier gazed with delight on the panaroma before him, and exulted to learn that above the rapids the navigation extended for a three moons' journey to a land of glittering metal.

Reëmbarking in his boats, he returned to the Emerillon, and looking in at the St. Maurice, returned to Stadaconé. Here his party had erected a palisade and planted cannon, making it strong enough to resist all Canada. They now prepared to winter there, but scurvy soon broke out and the men died rapidly. In vain public devotions were performed, and a pilgrimage vowed to Our Lady of Roc Amadour. Not till an Indian remedy was tried did the evil stay.

In the spring, taking by stratagem Donnacona and several of his chiefs, and leaving the little Hermine (which he could no longer man) Cartier sailed from Quebec May 6, 1536, and by the 16th of July reached St. Malo.

Of his second voyage, an account addressed to the king was printed at Paris in 1545, and has been reprinted this year in the same city by M. d'Avezac, who has collated it with three manuscripts in the Imperial Library, by which means he has fortunately added considerably to the already valuable vocabulary given by Cartier as the "Language of the countries and kingdoms of Hochelaga and Canada," but which seems to be mainly of Hochelaga, many of the words being unmistakably Iroquois, and few recognizable as belonging to any of the numerous Algonquin dialects.

Cartier was not able at once to return and plant a colony. The Indians remained in France, were baptized March 25, 1538, and finally died in their exile. Thevet, the cosmographer, records his frequent interviews with Donnacona, who died soon after, four or five years subsequent to his arrival in France.

In 1540, Francis I. commissioned Francis de la Roeque, Sieur de Roberval, whom he nicknamed "the petty king of Vimeux," to continue the discovery; and on the 17th of October, by another patent, the king, "fully persuaded of the good sense, capacity, loyalty, galantry, courage, great diligence, and good experience," of Jacques Cartier, constituted him Captain-General and Master Pilot of the whole expedition.

Meanwhile five vessels were slowly fitted out. But Spain was now alarmed. When Verrazzano ran along the northern coast of the continent bearing the banner of France, she at once sent Estevan Gomez to the same territory, and that navigator in 1525, visited the shore from St. Mary's Bay on the Chesapeake to Narraganasett. Now that France was renewing her attempts to occupy some portion of the New World, Spain prepared to prevent her. Spies were despatched to France to learn all the particulars of the expedition, and the Council estimated at 150,000 ducats the cost of a fleet to "resist and offend that of France." This was more than could be easily given then, and they consoled themselves with the reflection that the French fleet was too small to attack any of the Spanish colonies, and "as for settling on the north sea, there is nothing where the French can go that is to be coveted or worth anything, and even if they do take it, necessity would make them leave it."

The spy who went to St. Malo reported that thirteen ships were fitting out under Cartier; that he spoke to him, and a relative of his apparently Macé Jalobert, and found that they were going to Canada to settle there and build a fort, carrying mechanics and iron works of all kinds, and that they would start about the middle of April, 1541, with 2,500 men.

This was rather alarming, the more especially as the letter of the ambassador in France, who seems to have demanded explanations of the court, at which he resided, said that they were going 700 leagues from St. Malo. This, on their maps, would bring Cartier to Florida in the discoveries of Ayllon and Gomez, and where De Soto actually was, and enable the French, in case of war, to waylay the treasure-ships of Spain. Hence it was resolved not to let them settle there or elsewhere, but to dislodge them at once, not openly, but by sending some adventurer with an expedition really fitted out by the king, but

nominally a private one, the acts of which might be disavowed when they had irreparably destroyed the French settlement.

Unconscious of the threatening cloud, Cartier with his fleet of five vessels sailed May 23, 1541. The voyage was long and stormy, and he did not anchor before Stadaconé till August 23rd. He planted his new settlement, Charlesburg Royal, at Cape Rouge river, and sent back two of his vessels under the command of Jallobert and his nephew Stephen Noel. On the 7th of September, leaving the fort in charge of the Viscount de Beaupré, he proceeded to Hochelaga. On his return to the fort, he found that troubles had already begun between the French and the natives, and that two of his party had been killed. Mistrust on both sides followed. The winter wore uneasily away. In the Spring the French fairly mutinied; and as Roberval did not appear, compelled Cartier to set sail. In the harbor of St. John, Newfoundland, in June, 1542, he found Roberval, who in vain endeavored to persuade him to return. In October, Cartier, as appears by official acts, was in St. Malo.

It is believed that he subsequently sailed in search of Roberval, but we have no account of his voyage.

His subsequent years were spent in St. Malo, or in the village of Limoilou, where he built a dwelling still known, though in ruin, as Portes Cartier. He was ennobled by Francis I, about 1549, and is styled in his later years, "noble homme Jacques Cartier, Sieur de Limoilou."

The period of his death is not ascertained. He died apparently not in St Malo, but at Limoilou, about the year 1555.

Cartier left no children. His nephew Jacques Nouel, "ship captain and Master Pilot," and Olivier Chatton, husband of a daughter of his sister Bertheline, succeeded him as navigators at St. Malo, and as such enjoyed the royal favor. Their descendants still exist at St. Malo, as do also descendants of his uncles on the father's side, who perpetuate the honored name of Cartier.

A portrait of Cartier deemed authentic, has long been preserved at St. Malo, and has in our day been copied extensively in France and Canada.—*New York Historical Magazine.*

SCIENCE.

Leaves from Gosse's Romance of Natural History.

(*Continued.*)

MULTUM E. PARVO.

Natural history affords not a few instructive examples of

"What great effects from little causes flow;"

and these are well worthy of our study, as presenting to us one peculiar aspect of the wisdom of God, with whom nothing is great, nothing small. Some of the mightiest operations in nature are the results of processes, and the works of agents, apparently feeble and wholly inadequate to produce them; and our wonder is excited when we are able intelligently to trace them to their causes. I propose, therefore, to devote this chapter to the consideration of a few of these, which come more immediately within the province of the naturalist. They may be classed, according to the nature of their operations, as either constructive or destructive.

How many a poetic dream is associated with the sunny isles of the Pacific! What a halo of romance encircles all our ideas of those mirror-like lagoons in the midst of the great ocean-waves, those long, low reefs just emerging from the sea, on which the cocoa-nut palm is springing from the very water's edge! Beautiful they are in our imagination, as we have realised the pictures drawn by Cook, and Kotzebue, and Beechey, by Stewart and Ellis, Darwin and Cheever. But, when we know that these thousand isles, these endless reefs, these huge barriers that curb the furious ocean, are produced by tiny, soft-bodied sea-anemones, by atoms of pulp, sluggish and seemingly helpless morsels of animated jelly, individually no bigger than the smallest flower that nestles in the hedge-bank—our wonder, instead of being dispersed by our philosophy, is deepened and incomparably augmented by it. "We feel surprise when travellers tell us of the vast dimensions of the Pyramids, but how utterly insignificant are the greatest of these when compared to these mountains of stone accumulated by the agency of various minute and tender animals! This is a wonder which does not at first strike the eye of the body, but, after reflection, the eye of reason."

The researches of the eminent naturalist whose words I have just quoted, have shewn us that the coral polype does not build from the fathomless depths of sea which immediately surround these reefs and islands. He seems to imply, indeed, that the coral animals cannot exist at a greater depth that thirty fathoms; but, whatever may be the case in tropical seas, we have already seen that living corals exist and build compound polypidoms at far greater depths in our northern latitudes. Assuming, however, that no reef is commenced deeper than thirty fathoms, and that below that depth the building instinct is not carried on, the only hypothesis which meets all the exigencies presented by the actual phenomena of fringing reefs, encircling or barrier reefs, and atolls or ring reefs, is that propounded and ably maintained by Darwin, that the whole area of the Pacific is slowly sinking; that all the reefs and islands are the summits of former mountains; that all the coral structures were originally attached to the land at a shallow depth, and that, to whatever depth below they now extend, it is only in a dead condition, and has been effected by the subsidence of the supporting land carrying the coral with it; while the successive generations of the living polypes, ever working upwards on the old dead foundation, have maintained a living coral structure near the surface, and that nearly in the same outline and form as the original foundation.

It does not accord with my purpose to enter into the details of this beautiful theory, but rather to present my readers with some vivid pictures of the wonderful structures themselves, as sketched by those who have seen them. In coasting along a tropical reef, the extreme clearness of the water permits the corals shrubs and groves to be distinctly seen, which rise from the blue transparent depths. They take various forms—some massive, with meandering channels over the rounded surface; some forming honey-combed blocks formed by the union of thin plates at various angles; many growing like trees or shrubs with leafless branches, more or less ramified, and with the twigs more or less slender and pointed, or thick and rounded. Under water, the whole surface is covered with a layer of jelly-like flesh, of many brilliant colours, formed by the crowding together of the myriad tiny polypes, which protrude their slender tentacles and expanding disks from the individual cells. Even when severed, the branches are exquisitely beautiful so long as they retain the faint purple halo that plays around their ivory tips, but which soon vanishes. A rude touch beneath the water will cause the lovely tints—brilliant crimson, orage, and emerald green—to disappear, by the withdrawal of the alarmed polypes; but they soon protrude again, and expand in their original loveliness.

The interest with which these gardens are contemplated is enhanced by the multitude of strange creatures which crawl over and through the shrubs. Fishes of the most gorgeous hues, elegant shells, with clouded and spotted animals carrying them, nimble prawns of crimson and yellow, long gliding green worms, and purple sea-urchins, with enormous spines, here find their home and live at ease beneath the unclouded sun.

The dimensions attained by the labours of the minute workmen are the most astonishing part of the spectacle. "Some individual specimens of *Porites*, in the rock of the inner reef of Tongatabu, are twenty-five feet in diameter; and *Astreas* and *Meandrinas*, both there and in the Fejees, measure twelve to fifteen feet. The platform resembles a Cyclopean pavement, except that the cementing material between the huge masses is more solid than any work of art could be.

"Sometimes the barrier reef recedes from the shore, and forms wide channels or inland seas, where ships find ample room and depth of water, exposed, however, to the danger of hidden reefs. The reef on the north-east of New Holland and New Caledonia extends four hundred miles, at a distance varying from thirty to sixty miles from shore, and having as many fathoms of depth in the channel. West of the large Fejee Islands the channel is in some parts twenty-five miles wide, and twelve to forty fathoms in depth. The sloop-of-war *Peacock* sailed along the west coast of both Viti Lebu and Vanua Lebu, within the inner reefs, a distance exceeding two hundred miles.

"A barrier reef, inclosing a lagoon, is the general formation of the coral islands, though there are some of small size in which the lagoon is wanting. These are found in all stages of development: in some the reef is narrow and broken, forming a succession of narrow islets with openings into the lagoon; in others there only remains a depression of surface in the centre to indicate where the lagoon originally was. (1) The most beautiful are those where the lagoon is completely inclosed, and rests within, a quiet lake. Maraki, one of the Kingsmill group, is is one of the prettiest coral islands of the Pacific. The line of vegetation is unbroken, and, seen from the mast-head, it lies like a garland thrown upon the waters.

"When first seen from the deck of a vessel, only a series of dark points is descried, just above the horizon. Shortly after, the points

(1) This does not agree with Darwin's theory of subsidence.

enlarge into the plumed tops of cocoa-nut trees, and a line of green, interruped at intervals, is traced along the water's surface. Approaching still nearer, the lake and its belt of verdure are spread out before the eye, and a scene of more interest can scarcely be imagined. The surf, beating loud and heavy along the margin of the reef, presents a strange contrast to the prospect beyond—the white coral beach, the massy foliage of the grove, and the embosomed lake, with its tiny islets. The colour of the lagoon water is often as blue as the ocean, although but fifteen or twenty fathoms deep; yet shades of green and yellow are intermingled, where patches of sand or coral knolls are near the surface, the green is a delicate apple shade, quite unlike the usual muddy tint of shallow waters.

"These garlands of verdure seem to stand on the brims of cups, whose bases root in unfathomable depth. Seven miles east of Clermont Tonnere, the lead ran out to eleven hundred and forty-five fathoms (six thousand eight hundred and seventy feet) without reaching bottom. Within three-quarters of a mile of the southern point of this island, the lead had another throw, and after running out for a while, brought up for an instant at three hundred and fifty fathoms, and then dropped off again and descended to six hundred fathoms, without reaching bottom. The lagoons are generally shallow, though in the larger islands soundings gave twenty to thirty-five, and even fifty and sixty fathoms."

The rate at which coral structures are formed is an interesting subject of enquiry, and various opinions have been formed on the point, some affirming that no perceptible increase takes place in several years, others that the process is so rapid, that the Pacific is fast filling up. Darwin's theory of subsidence negatives this conclusion, independently of the rate of growth. There are facts on record, however, which imply that, in certain circumstances, the process is rapid. A channel that had been dug through the reef of Keeling Atoll for the passage of a schooner, that had been built on the island, from the lagoon into the sea, was found ten years afterwards to be almost choked up with living coral. An interesting experiment was tried at Madagascar, by securing several masses of living coral by stakes three feet below the surface. Seven months afterwards they were found nearly reaching to the surface, firmly cemented to the rock, and extended laterally several feet; a remarkably rapid growth!

An ingenious inquiry has been started, whether the coral polypes may not yet be employed by man for the construction of sea-walls and reefs, in places within or near the tropics, where they are needed. Professor Agassiz has shewn that it is not difficult to obtain living specimens of the zoophyte, and to preserve them, so as to study at leisure their habits and motions. Why, then, it as been asked, as we employ the silk-worm, and furnish it with food and material to spin for us our silks, and as we plant and form beds of oysters in favourable locations, where we please, may we not also employ the agency of the coral lithophyte, to lay the foundations, for instance, of a lighthouse, or to form a breakwater where one is needed? Such a practical result is by no means improbable, from the minute and scientific observations now making upon these busy little builders of the deep.

Let us look now at another class of labourers by whom mighty deeds are performed, though the performers themselves are so inconceivably minute, that to say they bear the same relation to the coral polype that a mouse does to an elephant, would be greatly to overrate their dimensions. They are, in fact,, invisible to the sharpest sight, except when aggregated together. I refer to the *Diatomaceæ*.

Of late years the attention of microscopic observers has been largely and increasingly occupied by a tribe of organic beings which are found to exist in all part of the world, fresh and salt waters chiefly, and present a great variety of species as well as of form and markings. They consist of a glassy shell, formed of flint, inclosing a soft coloured substance, generally of a golden yellow or brown hue. This is called the *endochrome*, and the shell is called the *frustule*. The latter has a determinate form, which often assumes extraordinary elegance, and is usually marked with series of specks, which are either knobs or pits, arranged in the most varied and exquisite patterns. They may exist either as isolated forms, or, more commonly, as united into long chains, or other connected figures. These are called Diatoms. They have spontaneous movements, and hence they were considered, when first discovered, to be animals; but the opinion now generally prevails, that they are plants of a very low grade.

The influence of these tiny atoms upon this world in which we live is almost beyond belief. "The whole bottom of the ocean," observes Dr Barclay Montgomery, "seems to be in a great measure made up of these bodies, Sir John Ross and other Arctic explorers speak of a large bank called the Victoria Barrier, 400 miles long and 120 miles wide, composed almost entirely of *infusoria*. During the last week I was engaged in examining a sounding from the bottom of the ocean at the depth of 2000 fathoms, on the exact spot where the Atlantic telegraph unfortunately gave way; although the quantity was minute, still I discovered a great number of interesting forms. What is known as Tripoli powder in the arts consists almost intirely of fossil deposits of the silicious coats of *diatoms*, which from their hardness form an excellent means of polishing metals; these fossil deposits are very numerous and in great quantity in different parts of the world. The town of Richmond, in the United States, is built upon a stratum of these bodies twenty feet in tickness; in California and America generally, in Bohemia, throughout Europe and Africa, and even in our own country, we find similar deposits, varying of course in the different species present. . . I have been enabled to examine some of the curious raised fossil beach near Copinpo in Chili, which is gradually forming into stone. Though this beach is one mile from the present shore, and 180 feet above the level of the sea, yet I have found in it *diatoms* of the same species as those that occur on the shore at the present day; the *diatoms* are also found in a fossil state in peat, coal, bog iron-ore, flint, and the chalk formation. Thus, in a geological view, though individually invisible, yet numerically they perform a most important part in the crust of the earth—a part more important than all the mighty monsters that lived in ages past. . . . What purpose do these bodies serve? It is highly possible that they form, in a great meaure, the food of all the minor aquatic animals more highly organised than themselves; I have often found, on examining shrimps, that their stomachs, which are situated behind the eyes, are entirely filled with *diatoms*. That the siliceous shell passes through nearly intact, there can be no doubt, but it is certain that the internal structure, the endochrome, may be digested and form the nutritive portion; in this view I am borne out by referring to guano—a most prolific source of fossil *diatoms*. Here we find abundance of siliceous shells, in fact their presence or absence is now the test of the genuineness of the article;—these, in past ages, must have been consumed by small marine animals, these again consumed by fish, and these in their turn by birds: in guano I have noticed the proportion of *diatoms* to be in some specimens nearly 1 in 500 parts. A correspondent from Callao, writing to the *Illustrated London News*, on the Cincha guano islands, says the export guano from the islands has increased considerably during the last ten years; between 300,000 tons and 400,000 tons are the annual amount at present: here, in a very moderate calculation, from one spot alone, we have the annual of 500 tons of *diatoms*."

The agency of these mighty but minute forms has been still further developed in some researches of great interest which have been very recently published by Dr Wallich. He has ascertained that they exist in a free, swimming condition, in various regions of the ocean, and at various depths from the surface downward; that their multitude is incalculable; and that they afford sustenance to immense numbers of molluscous and crustaceous animals, which in their turn constitute the food of the most gigantic creatures of the deep. Dr Joseph D. Hooker had noticed the vast profusion of *Diatomaceæ* in the Antarctic Sea; and he was struck by the conspicuous appearance presented by their masses imbedded in the substance of the ice, or washed up on its surface by the action of the billows.

Dr. Wallich found the surface of the Bay of Bengal and the Indian Ocean to be crowded with masses of minute life, forming yellow streaks, flakes, and tufts, intermixed with glistening points, which, when examined, proved to be recognisable forms of the organisms in question. The mighty scale on which the *Diatomaceæ* really exist, did not become manifest, however, until he reached the Atlantic, between the Cape and St. Helena.

"It was here that, for many degress, and in bright, breezy weather, the ship passed through vast layers of sea-water so thronged with the bodies of a species of *Salpa* (*S. mucronata*) as to present the consistence of a jelly. What their vertical limits were, it was impossible to discover, owing to the speed at which the ship was moving. They appeared to extend deep, however, and in all probability, were of a similar character to the aggregations of what is called whale-food in the higher latitudes. Each of these *Salpæ* measured about half an inch in length; but so close was their aggregation, that, by a sudden plunge of an iron-rimmed towing-net half the cubic contents, from which all water had percolated, generally consisted of nothing but one thick gelatinous pulp. Each individual presented a minute yellow disgestive cavity, the size of a millet-seed, which contained Diatomaceæ, Foraminifera, and other organic particles.

"If we take into account the numbers of Diatomaceæ and Foraminifera that must exist in order to afford even a small integral proportion of the diet of these creatures, the vast renewal of supply that must be perpetually going on, and the equally vast multitude of these Diatom-consumers that yield, in their turn, a source of food to the gigantic Cateceans and other large creatures of the sea,—it becomes possible, in some measure, at least, to form an estimate of the manner in which the deep-sea deposits become accumulated."

The same observer has, with great ingenuity, applied these facts to the solution of that much-vexed question, the origin of the masses of flint that are found in the chalk. Diatoms are found in great numbers

in these nodules, but the difficulty was, how to account for their aggregation in these irregular masses. This is solved by the hypothesis that they are the excrement of whales,—the insoluble remains of the Diatoms, orginally devoured by the Molluscs, which in their turn found a grave in the stomach of the Cetacea... "We find that the siliceous particles of the *Diatomaceæ*, *Polycistina*, *Acanthometræ*, and *Sponges*, exist not only in a state of the utmost purity, but that they occur precisely in that state of minute subdivision which favours the solvent or aggregative process in an eminent degree. We see that they are gathered together by the Salpæ, in the first instance, from the element in which they live, and that they are freed of all, or nearly all, their soft portions, by the action of the digestive cavities of these creatures. We find that the Salpæ again, in inconceivably vast numbers, afford almost the entire food of the largest orders of Cetaceans; and I therefore think we are able to infer, with certainty, that, in the complex stomachs and intestines of the latter, the further process of aggregation of siliceous particles goes on upon a gigantic scale, aided by the presence of the alkalies, and that the aggregated masses being voided at intervals, slowly subside, without interruption, to the bed of the ocean."

Darwin records having seen clustered objects in the sea near Keeling Atoll, which he does not name, but which from the figures he has given must have been Diatoms. But all the streaks and bands of colour seen on the ocean are not attributable to plants: some of them are certainly of an animal nature. The following phenomenon was noticed by the observer last named on the coast of Chili. The vessel passed through broad bands of reddish water, which when examined microscopically swarmed with minute active animalcules, darting about, and often exploding. They swam by the aid of a ring of vibratory cilia, which suggests the thought of the larvæ of some Annelid. They were exceedingly minute, so as to be quite invisible to the naked eye, being not more than one thousandth of an inch in length. Their numbers were infinite, for the smallest drop of water which could be removed contained very many. Yet in one day, they passed through two spaces of water thus stained, one of which alone must have extended over several square miles. How utterly inconceivable, then, must have been the multitude of these minute creatures!

(To be continued.)

EDUCATION.

Scotch Scholastics.

[A Paper read before the McGill Normal School Teachers' Association, by T. A. Gibson, Esq., M. A.]

At the last monthly meeting of our Association, my colleague in the High School, Mr. Murray, read a very instructive and interesting paper on *English Etymologies*. It was also very comprehensive, a *multum in parvo* gratifying and refreshing the memories of some by the recognition of old familiars, and introducing new acquaintances to others. Mr. Murray seems to have traversed this field *con amore*. Having myself traversed the same field with a somewhat congenial spirit, when I was called upon to make up my mind to select a subject for this evening's paper, I felt at first inclined to follow up Mr. Murray's lead by devoting my remarks to a department of *Etymology* which, upwards of a quarter of a century ago, engaged my enthusiastic research, I mean, the *etymologies* of *Names of Places*. Indeed, without incurring the charge of egotism, I believe that I am correct in stating that, since the publication of my small work, entitled "Etymological Geography," drew the attention of compilers of Geographical text-books to this useful and interesting branch of geographical knowledge, it has received the systematic prominence to which it is entitled. An examination of the best handbooks then and now in use serves to establish this fact. As however variety in the subjects for *discussion here* and *reflection hereafter* seems desirable. I have dissuaded myself from the compilation of a paper on a subject similar to our last and have undertaken that of one which has required at my hands more research than I at first anticipated. Even a cursory glance at the prominent scholastic literature and men of Scotland may prove neither uninteresting nor unprofitable to a Teachers' Association. As I propose to allude briefly to the different sorts of schools in Scotland attended by the youth of both sexes, I appropriately designate my paper by the title of

SCOTCH SCHOLASTICS.

In the outset I may remark that Scotland contains 33 counties, subdivided into upwards of 1000 parishes. To each parish at the Reformation were assigned a clergyman and school-teacher. Since then several parishes *quoad sacra* have arisen within the civil parishes, in which the population has in the course of generations, through commercial progress and other causes, greatly increased. (Ecclesiastically considered in connection with the Establishment, Scotland is at present controlled by 16 Synods, subdivided into 83 Presbyteries. The most extensive Synod is that of Glasgow and Ayr, comprising 8 Presbyteries and about 150 parishes; whilst the smallest is that of Shetland in the extreme north, comprising only 2 Presbyteries and 12 parishes.) I am led to say a little in regard to Parochial and Burgh schoolmasters in the first place. The appointment of a parish teacher rests with the heritors or landed proprietors of the parish. These at a legal meeting convened for the election, settle the candidate by a majority of votes. By this appointment he becomes entitled to a proportion of salary from each heritor according to the *cess* (or census) *roll*, but subject to the following condition. Within a given time he must appear at a statutory meeting of the Presbytery of the bounds, and, having presented an extract minute of his appointment, he must undergo examination in the branches requisite for such school. Having procured a satisfactory certificate of his qualifications to instruct in these branches, he becomes fully entitled to all the emoluments of the office *ad vitam aut culpam*. (Having twice undergone this ordeal, not without some trepidation as to the result, I can bear testimony to its generally comprehensive and searching character.) The teacher, according to the terms of his appointment just referred to, cannot be removed from his office and its emoluments as long as he maintains respectability of character and discharges efficiently his duty. Under circumstances of inability through ill health or advancing years he is allowed to employ a substitute with the consent of the heritors and the certificate of the presbytery. Sometimes the superannuated incumbent compromises with the electors, that a permanent successor may be appointed. In cases of notorious immorality or neglect of duty the incumbent is liable to be summoned before the presbytery, i. e. *libelled*; and, if the charges against him should be proven, the sentence of deposition by the presbytery is considered as final and without the power of appeal to a civil court. At any rate the law formerly enacted so, and the clause in the act was regarded by many teachers as a sore grievance. I rather think that the objectionable clause has been since amended. Besides the salary and fees each teacher has, *by statute*, a dwelling-house and garden. These, of course, vary much according to the liberality or niggardliness of heritors. In the case of extensive parishes the heritors sometimes erect one or more schools in such localities as may suit the population. These are called *side* schools, and are similar but inferior to the parish schools, being partially endowed like them. The parish schools used to be annually examined and reported upon by the members of presbytery or committees thereof. In this respect there has been a great change within the last quarter of a century, relieving the presbyteries in a great degree from this periodical burden; inasmuch as, by the appointment of school inspectors by the government, these now inspect and report, not only upon the schools of the Establishment but upon those of the Free Church and of all receiving aid from government.

(I must here apologize for bringing a few particulars under your notice in a very disconnected manner as I have taken them up in the order in which they started to my memory.) It may be interesting to mention a few items in regard to the Fund for the Relief of the widows and children of Burgh and Parochial schoolmasters. This numerous body, impressed with a sense of their obligations to provide somewhat towards the relief of their widows and families, applied for and procured an Act of Parliament in 1806. By this Act it was provided that every incumbent in a Burgh and Parochial school at the time of its passage had the option of becoming a contributor or *non*-contributor to the Fund; but that every teacher appointed to a school thereafter should intimate, within the statutory period after the date of his election, to the collector chosen by each presbytery, his choice of one of the 5 annual rates of payment. These rates were 1, 2, 3, 4 or 5 guineas according to the 1st, 2nd, 3rd, 4th or 5th classes. According to the 5 rates the widows are entitled to an annuity of £6, £12, £18, £24 or £30 sterling. Any teacher failing to signify his choice of a rate within the prescribed date subjected himself to be attached to the 3rd or middle rate of guineas. Such contributor is liable to pay double in the years of election to office and marriage. On resignation he is at liberty to discontinue, of course forfeiting all the previous payments. (I have myself experienced the forfeiture to some extent.) It is gratifying to find from the Annual Report for 1858, the last which I have in my hands, that many, who had held office for a few years but have since been ministers or professors for many years, have continued their yearly contributions. Of such I notice some in the British Colonies; as, Revd. Dr. Donald, St. Johns, N. B., whose date of entry is 1838, Revd. D. Macleod, Cape Breton, whose entry dates as far back as 1827, each ranking under the 4th class, or the rate of 2 guineas. On remarrying, a widow forfeits her annuity. In 1858 the capital invested in heritable security was £77,600, cash in the Royal Bank £5,500.

In 1858 there was an increase over 1857 of £2,565 3 2. In the

same year the annuitant widows amounted to 206 and children to 17,223; amongst whom was distributed the sum of £3,013. The total contributors amounted to 1,265. There were 59 vacancies and 15 non-contributors surviving since the passage of the Act in 1806: so that, when these vacancies shall have been filled up and the survivors shall have died, there will be a gross total of 1,339, to which are liable to be added the masters of any newly erected schools coming within the scope of the Act. The annual contributions in 1858 were £2,731 1. When I was in Scotland in 1859, I understood that it was the general impression that the Fund was so prospering that it was likely that the annuities might be doubled, thus making the highest £60.

To several parishes have been mortified or given in mortmain by parties dying at home or abroad considerable sums of money, hence called *mortifications* according to a Scotch acceptation of the term, the interest of which goes towards the education of a certain number of paupers, sometimes limited to those bearing the names of the *mortifiers*. Children of paupers are now generally kept at school at the expense of the parish; or teachers are bound to receive a certain numbers at a reduced fee.

In connection with this it may be noticed that there exist in the capital of Scotland and in Glasgow, the commercial capital, county-associations or clubs, composed of natives of various counties, who, by having attained after a long residence to positions of trust and usefulness, have become identified in large numbers with these capitals in various walks of life. These clubs, whilst cherishing friendly intercourse amongst the members, have in view the promotion of the welfare of young countrymen recently resident among them, and the advancement of education in their respective counties by the distribution of prizes, the institution of bursaries and otherwise. The rules provide for the carrying out of these last objects by means of resident standing committees, and, in order to interest the counties, local committees are appointed, that correspond with the head committees. Such clubs are sometimes confined to a single county, when large, but frequently embrace a few adjoining counties. In some cases prizes for excellence in a great variety of branches are awarded to competing pupils who have assembled from the schools of an entire county and have been subjected for several hours to a searching examination by competent examiners selected by the office bearers. In this way the relative merits and demerits of teachers as well as of pupils are drawn forth. On such occasions the schools usually receive 2 or 3 holidays. There are few counties now that are not reaping benefit from the formation of such clubs.

Teachers who are co-presbyters frequently form themselves into associations for the purpose of consulting together on subjects affecting their individual interests or those of the body generally. Periodical meetings, monthly or quarterly, are held and essays read, &c. The members usually dine or sup together, thus cherishing friendly intercourse and a proper *esprit de corps*. Intimacies, lasting through life, are thereby frequently formed.

In 1818, 45 years ago, certain Burgh and Parochial schoolmasters, taking into consideration the serious obstacles presented to teachers and scholars not only by the inferior and unsuitable character of many schoolbooks, but by their almost endless variety, formed themselves into a society for the purpose of remedying in some degree the evils connected therewith. It is called the "Scottish School-Book Association." It has for its object the preparation and improvement from time to time of a complete system of school-books for the use of the schools of the members, and also of schools in general. Membership depends upon the regular use of a certain number of the association's publications. A general meeting is held annually in Edinburgh for the transaction of business and the election of office-bearers.

From the 40th Annual Report for 1858, I gather the following items. The members amounted to 352.

From the profits arising from the sale of the books it was agreed to award annually 6 Bursaries towards assisting deserving young men in the prosecution of their studies at college. The Bursars must be the sons of members of 5 years' standing or of deceased or retired members for the same period. When there are more candidates than bursaries, the decision is by comparative trial; when there are not, by relative trial. The trial may be either oral or by means of examination papers. £100 were allowed for 1858–9, the highest being £20. The bursaries are available at any of the 4 Scottish Universities. The treasurer pays the whole sum on the 1st of December on the production of the Matriculation ticket. Some idea of the nature and extent of the trial may be gathered from the following extracts.

"Candidates must, along with their names, lodge a statement of what they *profess*, and the following is the lowest *profession* that will entitle a first year's Student to be taken on trial, viz.—Association's Latin Delectus; Cæsar's Gallic War, Books II. and III.; Virgil's Æneid, Book I.; Greek Grammar: Greek New Testament, First Six Chapters of St. John's Gospel; Homer's Iliad, First 50 lines of Book I.; a translation of a few sentences into Latin and Greek; Outlines of Ancient Geography, *Italy;* Roman Antiquities, *Religion;* Euclid, Book I.

"The following is the lowest *profession* that will entitle a second year's Student to be taken on trial,—Livy, Books I. and II.; Horace, Odes, Books II. and II.; Mair's Introduction; Xenophon's Anabasis, Book III.; Homer's Iliad, Book II.; a translation of a few sentences into Latin and Greek; Outlines of Ancient Geography, *Italy;* Roman Antiquities, *Religion*.

"The Bursaries to be available at any of the four Scottish Universities."

The publications in English, Arithmetic, Geography, History, Mathematics and Physical Science amount to 20. A few of the Latin series has been issued. 13 school-room Maps and skeleton maps of Europe, Scotland and England, of a superior kind, have also been issued.

The publications have been compiled in whole or in part from manuscripts sent in by parties induced to compete in consequence of advertisements in the newspapers offering premiums for those adjudged as best by reliable judges, selected by the Association, whose names are published. The notes, accompanying the successful MSS, bearing a motto, being opened, the authors are ascertained and made known to the public. (I am fain to mention that, being a competitor on one of the early occasions, I had the gratification of finding my M S selected as second-best, entitling me to £15 stg.)

Besides the Parochial schools there are *Burgh* or *Grammar* schools chiefly under the control of the Councillors or Magistrates of the Royal Burghs. (There are 63 royal burghs and 13 towns ranking with them.) Little of the early history of Grammar schools is known. Like the other educational institutions of Scotland, they at first existed chiefly for ecclesiastical purposes. As the Universities were founded in connection with bishoprics, so Grammar schools were at first attached to cathedrals or convents. The bishop of the diocese was chancellor of the University by right of office (*ex officio*), and the abbot of the monastery was superior and patron of the Grammar school. Thus the Grammar school of Edinburgh owes its existence to the monks of the Holy Road, and that of Glasgow sprang from the cathedral. These are now respectively designated as the high schools of Edinburgh and Glasgow. The monks devoted much time to the instruction of ecclesiastics or young men destined for the priestly office, whilst the sons of the nobility, as a privileged class, were permitted to share in the advantages of their instructions. Thus young ecclesiastics and nobles alone enjoyed the benefits of a classical education. By and by provision was made for the instruction of those of inferior rank, excluded from the advantages of the monastery, as the friars, not constantly required there, were permitted to devote their spare time to their education. In this way the monks or friars were the first public teachers.

As both the Parochial Burgh schools have in many instances been found inadequate to the advancing requirements of society, there have arisen within the present century many educational institutions of a higher character, occupying a middle rank between the Universities and the Burgh or parochial schools. These *Academies*, as they are called, have through the fostering care of generous patrons exercised a most beneficial effect on all ranks. They owe their foundation to the contributions of individuals resident in the district or who may have left in early life and acquired competency or wealth abroad. The direction is chiefly in the hands of resident subscribers. In the case of an election of masters, subscribers to a certain amount are entitled to vote, whilst those at a distance can do so by proxy. The directory is usually incorporated by royal charter. Besides pupils from the town and the surrounding parishes and counties, not a few are the children of men engaged in commercial and military pursuits in foreign parts. In several cases Burgh or Parochial schools have been merged into these Academies. There is usually a staff of 3 or more masters. One of these is sometimes regarded as specially the Burgh or Parochial teacher, possessing exclusively the privileges of Burgh and Parochial teachers. Sometimes the entire staff rank as such. Among the Academies may be mentioned those of Edinburgh, Cupar (Fife), Elgin, Banff, Perth, Inverness, Tain, Dumfries, Ayr, &c., &c.

Within the present century several customs in connection with these Burgh or Parochial Schools have become obsolete. I may allude to two, viz., *Cock fighting* and *Candlemas Day*. The former was a sport, handed down from ruder days, and generally was kept up once a year. Of course the day was a holiday the desks and forms were arranged around the walls so that a clear arena was reserved for the fierce combatants, in whose defeat or victory the youthful spectators took a lively interest, as the boy was hailed "King," whose cock held the pit as defiant victor, while the owners of cocks that shirked or hung fight when set on the arena (commonly called *fugés*) were in great disgrace, their birds being forfeited to the teacher or a

fine paid instead. In the evening there frequently ensued a ball, in which of course the favorite reels and *contres-danses* (country dances) were kept up till a late hour to the music of fiddles and perchance the bag-pipes, the *King and Queen* being distinguished by leading off dances.

On the 2nd of Febuary, Candlemas Day, (which was formerly celebrated by burning many candles) pupils were in the practice of waiting upon their teachers and presenting them with several pounds of candles of the best description; so that they usually received a supply of that article, so necessary for domestic use before the discovery of gas and coal-oil, sufficient for a year's consumption. I myself have a distinct remembrance of a chest of drawers being well filled on such occasions in my father's house in Forfar. Since the discontinuance of the candle gift its equivalent in money is kept up in some schools, the parents in this way showing their good wishes for the welfare for the teacher and his family. The day is observed as a holiday.

In the high School of Edinburgh and Glasgow and in some of the upper Academies and Burgh Schools the *vacation* continues through the months of September and November. In the lesser towns it seldom extends beyond a month. In the landward parishes its length and time are chiefly regulated by the operations of the harvest, in which the scholars afford material assistance.

From the Census of Scotland for 1861, issued by the Register General and his Assistant, I may read from the following headings viz;

TEACHERS AND SCHOLARS.

It will be observed that teachers are more equally distributed over the country than any other class or profession; and, in so far as male teachers are concerned, in a ratio tolerably correspondent to that of the population.

It is a natural step from the teachers to the scholars. These comparative tables show that 467,056 persons were tabulated as "Scholars," of whom 241,803 were males, and 225,253 were females. These numbers indicate that 15.2 per cent, of the population, or one in every 6.5 persons, were receiving education at the date of the census, and were returned as scholars.

COMPARISON OF ENGLAND WITH SCOTLAND AS TO SCHOLARS, &c.

It may be noticed, as a singular fact, that although England, by her Occupation Tables, shows that a slightly larger proportion of her population is in the receipt of instruction as scholars—viz., 15.7 per cent. of her population, the number of adults able to sign their names in the marriage registers is very much below that of Scotland. Thus, in 1859, the latest year for which detailed returns have been published for Scotland, 89.1 per cent. of the men, and 77.8 per cent. of the women who married in Scotland were able to sign their names in the marriage register. In England, during the same year, only 73.3 per cent. of the men, and 62.4 per cent. of the women who married were able to sign their names. The cause of this anomaly is worthy of inquiry, inasmuch as it would almost lead to the conclusion that the elementary education in England is of an inferior quality, and consequently sooner lost by a considerable proportion of the population.

Time would entirely fail me to enter at present into details regarding the truly munificent *Dick Bequest*, which applies to upwards of 150 parishes in the countries of Aberdeen, Banff and Moray, if my memory serves me correctly. In reference thereto it may be remarked that the operations of its managers have tended to raise the teachers in these counties very much in professional standing. The *Normal Schools* in Edinburgh and Glasgow, in connection with the Established and Free Churches. The *Charitable or Educational Institutions*, Scotice *Hospitals*, endowed by gentlemen who had amassed wealth by indestry and success in business, desirous either of perpetuating their names in connection with these endowments, or of benefiting the generations of the young in their native towns or countries, belonging to particular classes or trades, a preference being sometimes given to certain names; viz, in Edinburgh, Heriot's, Donaldson's, George Watson's, John Watson's, Cannin's, Fetter's, Merchant Maiden, Orphan &c. &c. In Glasgow, Hutchinson's &c. &c. In Aberdeen, Gordon's &c.— The Teachers in these Institutions have frequently become ornaments in the Churches and Univerties.— *Ragged Schools*, in connection with which the name of Guthrie is honorably identified, *Private Academies* (male and female). In the former is imparted by a select staff of teachers, instruction qualifying for the Universities, Army or Navy, while in the latter the Educational wants of the fair sex are fully supplied.

We propose to devote a short space to notices of the four gentlemen who, within the last century, have occupied the Rectorial Chair in the High School of Edinburgh. In 1761, after filling for 3 years the office of Head-Master in George Watson's Hospital, Alex. Adam, was appointed by the City Council the *Joint-Rector* with Alex. Matheson during a period of bad health. After an interval of 4 years he became *Sole-Rector*. He filled the office for 41 years. Amongst his pupils will be found the names of most distinguished statesmen, lawyers and men of letters. He had a share in moulding the youthful minds of such men as Henry (Lord) Brougham, Sir Walter Scott, Francis Jeffrey, &c. "It was from this respectable man," says Sir Walter, "that I first learned the value of the knowledge I had hitherto considered only as a burdensome task."

Mr. Adam was the youngest son of an industrious farmer in the parish of Rafford, Moraysh; and received the elements of his education at the parish school. Here he continued till he was considered fit to come forward as a *bursar* at the university at Aberdeen. His failure in the attempt only stimulated him to fresh exertions, and through the representation of a clergyman of Edinburgh, a relative of his mother, he was induced to try his fortune in that metropolis. Here he prosecuted his studies at the University under unexampled hardships, which his biographer details. These far exceeded the average of hardships undergone by the least favoured of Scotia's students. Shortly after entering upon the duties of the Rectorship he began to compose a series of works designed or adapted to facilitate the study of Latin language. He first composed in English and published "Rudiments of the Latin and English Grammar" with the view of combining the grammars of both languages, and superseding the grammar of Ruddiman. He regarded as anomalous and preposterous (and rightly according to our judgment) the hitherto almost universal practice of teaching boys Latin from a text-book written in the language which they were going to learn. This rational innovation was met with the bitterest opposition by the generality of teachers, so firmly had Ruddiman's Rules for Latin Grammar in hexameter verse been fixed in the memories of the scholastic profession. Even in the High School itself not one of his four Classical colleagues (whose pupils were accustomed at the commencement of the 5th year to join the Rector's class with the view of finishing the curriculum under him) was induced to introduce it for several years. It received however the approbation of a discerning few, among whom may be mentioned Lord Kames, Bishop Lowth, and Dr. Vincent, Master of St. Paul's School, London. The merits of the Grammar have been long since approved, and it has come into extensive use both in Great Britain and America. At intervals of a few years he brought before the public in succession his other works, which have proved so serviceable to classical sudents; viz. Roman Antiquities, Classical Biography, a Latin Dictionary, &c. These works came out in octavo. The "Summary of Antiquities" has gone through several editions, much improved by the editorship of Dr. Boyce, one of the Classical Masters of the School, and illustrated by handsome cuts. It has become the standard text-book on this subject even in the "Eternal City." I have had it from the lips of Dr. Adam's immediate successor that during the compilation of these works he was in the habit, even in the depth of winter, at 4 in the morning, of carrying a load of books for research from his library to the warm kitchen and of continuing his, to many dry, labours till towards day break when the stir of the family reminded him of the duty of ceasing from them. From his publications chiefly, he is said to have died worth about £20,000. On the 13th December, 1809, whilst engaged in his professional duties, he was seized with apoplectic symptoms. In a few days he fell into a state of torpor which brought on death on the 18th. His last words, remarkably characteristic of the prevailing tenor of his mind, were these; "It grows dark, boys, you may go."

In 1809, Dr. Adam was succeeded by Mr. James Pillans, a favourite pupil ranking next to Francis Horner when Dux of the school in 1792. After attending the University he spent several years in England where he became well acquainted with the different systems of education pursued in that country. Accordingly he introduced advantageously several new features derived from experience of the methods of instruction in the large Classical Schools of Eton, Rugby, &c. The chief of these was the practice of Latin versification. In the 16th century, Scotchmen were great proficients in this art, as is testified by the poetry of Buchanan and others, whilst in more recent times Southern Scholars far excel their Northern neighbours. During his incumbency the pupils under him exceeded in number those of any previous period in the history of the High School. In teaching his large classes, sometimes amounting to 200, he introduced the monitorial systems of Bell and Lancaster. He held the office until 1820, when he was removed to the chair of Latin or Humanity in the University. The honorable distinction of *Literæ Humaniores* has been given to the Latin Classics from their humanizing influence. He continued to discharge the laborious duties of this chair with the highest success and acceptance (although with some falling off in the latter years), till the close of the session in April, 1862, when he resigned after an occupation of the Chair for 42 years. He survived his resignation for nearly a year, having died in March last at the advanced aged of 86.

Besides "First Steps in the Physical and Classical Geology of the Ancient World" and "Elements of Physical and Classical Geology," to which is annexed in an appendix a valuable anthology containing a

selection of passages from the Latin poets, illustrative of ancient localities and peoples, the Professor issued in 1856, a volume in large octavo, entitled "Contributions to the cause of Education," and dedicated, with permission, to Earl Russell, a fellow-collegian in Edinburgh. From a glance at these it may be seen how largely he wrote on this subject. To mention a few — "Principles of Elementary Teaching, chiefly in reference to the Parochial Schools of Scotland, in two Letters to T. F. Kennedy, M.P., "Speech on Irish National Schools, two articles in the Eldinburgh Review on National Education in England and France, Minutes of Examination before a large select committee of the House of Commons on the subject of Education, in 1834, three lectures on the Relative Importance of Classical Training in the Education of Youth, Rationale of School Discipline, and a host of other papers.

Mr. Pillans was succeeded in 1820 by Mr. Carson, who had for 15 years discharged the duties of one of the Classical Masterships with acceptance. A native of Dumfriesshire, he received the elements of his education at the far-famed School of Closeburn, which had the reputation of sending forth some of the most distinguished Classical Scholars in Scotland about the close of the last and commencement of the present century. Among these I may mention Drs. Hunter and Gilespie, both professors of Humanity in St. Andrew's University. His editions of most of the Classical Authors in common use in School and College, that issued from the St. Andrew's University printing-press, were unrivalled at the time for their accuracy of punctuation and typography; and Dr. Hunter's Latin prefaces have secured for him a foremost name in proficiency of Latin composition. Mr. Carson, before his connection with the Edinburgh High School, was rector of Dumfries Academy for some years. He occupied the rectorial chair in the metropolis till 1845, when he resigned, having faithfully laboured in the Institution for 10 years. His colleagues, in unanimously passing resolutions expressive of their deep regret at his retirement, conclude thus: "He was popular beyond all others as a master, the last class formed by him having been the largest ever assembled within the walls of the High School. He edited Phædrus and Tacitus, annexing to the former a full vocabulary of all the words, with renderings of the more obscure passages, &c.; while the latter are much appreciated by Classical Scholars for the accuracy of the punctuation and the judicious selection of the various readings. His principal original work is, "The Construction of the Relative Qui, Quæ, Quod," a work highly approved of by Dr. Parr, one of the most distinguished Classical linguists of this century.—For upwards of 50 years before Mr. Carson's accession to the rectorship, the New Town had been rapidly extending and attracting to its handsome mansions the more wealthy and aristocratic portion of the inhabitants. Gradually, feelings of dissatisfaction on account of the distance of the High School in the Old Town began to be felt and expressed. These eventuated in the foundation of "the Edinburgh Academy" in 1822, and in its opening in 1824. In consequence, a generous rivalry between both institutions sprang up, and has since existed, conducing materially to each other's improvement. The desirability and necessity of a larger and more commodious building in a more central quarter of the city began soon to be discussed in the newspapers—which resulted in a determination on the parts of the patrons, the City Council, to build a suitable new edifice. The foundation stone was laid by the late Marquis of Breadalbane in July, 1825, and the opening took place in June, 1829. Both events were signalized by ceremonies and processions unsurpassed in the history of the metropolis. It occupies, it may be said, almost an intermediate locality betwixt the Old and New Towns, and is certainly one of the most elegant edifices in the City. Its whole expense amounted to nearly £35,000. Of this large amount George IV. contributed £500 through Viscount Melville, *alumnus* of the School. On the occasion of Dr. Carson's death in 1850, besides the erection of a handsome cenotaph in the spacious lobby of St Gile's Church, his friends and admirers formed themselves into "the Carson club" and subscribed the sum of £50, the interest of which provides a gold medal, called "the Carson Medal," presented every year to the writer of the best English essay on a prescribed subject connected with Classical antiquity.

Shortly after the resignation of Dr. Carson, Dr. Leonhard Schmitz was elected to the office, which he continues to hold at the present time. He is a Rhenish Prussian, having been born in 1807, at Eupen near Aix-la-Chapelle. In his 12th year he lost his right arm, a very serious accident indeed, but one which ultimately tended to forward his natural inclination to follow a learned profession; for in 1820, he entered the Royal Gymnasium of Aix-la-Chapelle and continued there till he completed its full curriculum of 8 years. On finishing the course of study in Prussian gymnasia the merit of pupils is indicated by certificates, of which there are 4 grades. Mr. Schmitz obtained a certificate of the 1st or highest class, testifying to his "unconditional fitness" for the University. This distinction had not been awarded to any pupil for many years previously. For 4 years he studied history, philology, &c. under the illustrious Niebuhr and others in the University of Bonn. From the first he had selected the instruction of youth as his profession, and, having completed his academical career, he underwent the prescribed examinations and was pronounced competent to conduct any glass of a Gymnasium. Having in 1835, married an English Lady, to whose health the climate of Bonn proved unfavorable he was induced in the following year to accept of a tutorship in an English family in Yorkshire. For upwards of 3 years he here devoted himself to the systematic study of the literature and habits of thought in Great Britain; in so much that he found it more congenial to his own feelings and tastes to remain in England than to return to Germany: and in 1840 settled in London, devoting himself to his favourite subjects of History and Classical Philology. From this time until his appointment to the rectorship in 1845, he pursued his literary labours with an unwearied perseverance, as may be judged from a partial enumeration of his published productions. In 1840, an English translation of Dr. Whigger's *Life of Socrates*, published in London, and German translation of Bishop Thirlwall's *History of Greece*, published in Bonn. In 1842, conjointly with Dr. Wm. Smith, he issued an English translation of Niebuhr's History of Rome in 3 vols. In 1843, he projected the *Classical Museum*, and continued to act as its editor till its completion in 7 vols. in 1850. To this periodical the foremost Scholars of the age, British and Continental, contributed. Whilst a student under Niebuhr, he had taken copious notes of the Professor's *Lectures on Roman History*. These notes, chiefly through the earnest solicitation of Bishop Thirlwall, he carefully revised, and in 1844 gave to the public, in English, 2 vols. of the *Lectures on Roman History*, commencing at the point at which the historian's published works break off. In the same year the King of Prussia, to whom the first edition was dedicated, presented to him through Chevalier Bunsen, the great *Gold Medal for Literature*, "as a mark of his Majesty's sense of the honour thereby conferred upon the memory of Niebuhr, one of the greatest Scholars of Germany." Since his accession to the rectorial chair his literary labours have been not less abundant, for he has since brought out in regular succession, an English translation of *Zumpt's Latin Grammar*, a *History of Rome* and also *of Greece*, a translation of *Niebuhr's Lectures on Ancient History* in three vols. and on *Ancient Geography and Ethnography* in 2 vols., an *Elementary Greek Grammar*, &c. &c. In addition to the above, the indefatigable doctor has contributed largely to the *Biographical Dictionary* of the Society for the diffusion of useful knowledge, and to the *Penny Cyclopedia*.

From the adove very hurried and imperfect sketch it is apparent that, in addition to the faithful and successful discharge of arduous and responsible professional duties, the *subsecive* (to coin an expressive word of Latin origin) literary labours of these four rectors have excercised an important influence in elevating the higher education of Scotchmen in particular.

An Essay on Common School Education.

BY MISS MARGARET ROBERTSON.

"What ought our Common School System to aim at? and how can the object aimed at be most effectually attained?"

The design of our Common School System is to provide the means of education for the children of the people. A few may avail themselves of the superior advantages afforded by our Grammar Schools and Academies, but the mass of the people must depend for the early education of their children, upon the Schools for whose establishment the law, in every settled District, makes provision. In them, many of those who are to enter the learned professions, must commence their course of study, while to the great number of those, who, twenty years hence, are to be the farmers, mechanics, and merchants of our country, they must afford the sole means of acquiring the knowledge, absolutely necessary to even a moderate degree of intelligence. The aim of the system, therefore, ought to be, to provide such means of instruction, as shall prepare the one class for benefiting to the utmost, from the opportunities which higher institutions of learning may afford them, and which shall best fit the other class for the intelligent use of the means of improvement which contact with the world may supply.

In the case of either class, the amount of knowledge to be imparted is not the *only* thing, nor, indeed, the *first* thing to be considered. To develop and strengthen the mental powers, to teach a child to observe, to think, to reason, must ever be the first consideration in any system of education, and the studies to be pursued in our Common Schools, as well as the method by which they are to be pursued, must be decided upon with reference to this end.

The amount of knowledge acquired must, even in the most favourable circumstances, be comparatively small, but were the amount great, it would be valuable to the child, less for its own sake, than for the sake of the mental discipline resulting from its acquisition.

The difference between the boy who has enjoyed five years of faithful instruction and discipline in one of our Common Schools, and the boy who has never entered a school of any kind, lies not alone in the knowledge of reading, writing, arithmetic, and geography, that the one possesses over the other. Compared with the thoroughly educated youth, both may be considered ignorant. But in the clearness of mental vision, which rewards the patient search after truth, in the mental strength, which is the result of difficulties fairly met and overcome, one is far in advance of the other. This difference is not always apparent in the boys. The superiority of the one over the other lies less in what he is as a boy, than in what he may become as a man. Through his books, and his skilful use of them, he has got a glimpse of a world of fact and fancy, which the eyes of the other have never been opened to see. With average ability, his course must be onward. He can never settle down into the *mere* artizan, or tiller of the soil, with no thought beyond the daily labor to be performed, the daily pittance to be earned. Whatever occupation he may choose, it will be pursued intelligently. The habits of patient attention, the ability to fix the mind on one subject, till it has been viewed in all its aspects, which must ever be the result of thorough mental training, will avail him in his workshop, or among his fields. He may forget the facts which formed the subject matter of his school lessons, rules may pass from his remembrance, he may lose his skill in solving problems, and in answering difficult questions, but the mental power acquired in dealing with these things in his youth, will not be lost to his manhood. In this mental power, and in its skillful and honorable application in the management of a man's own business, and in the performance of the duties which he owes to the community, lies the difference between the intelligent and useful citizen of a country, and the man whose only claim to citizenship is, that he earns and eats his daily bread within the country's limits.

A matter of greater importance than the imparting of knowledge, or even than the ensuring of thorough mental discipline to the young, is their moral training. Knowledge is power, but knowledge unguided and unrestrained by high moral principle, is a power for evil, and not for good. Among the schoolboys of to-day, are the Judges, Magistrates, Legislators, of the future. If, twenty years hence, the affairs of this rapidity advancing country are to be subject to the guidance of good men and true, it must be through the influence exerted on the youthful portion of the community during the next ten years. In proportion as they are successfully taught, that even with regard to the affairs of this world "goodness is wisdom, and wickedness folly," will they be worthy to take up the trust, which the future holds for them.

Among the various means to which we have a right to look for the attainment of this end, none can be placed as to importance, in advance of our Common School system of education. How can it be made a more efficient instrument to the attainment of this end?

In attempting to answer this question, it can be no part of the Essayist's duty, to point out those respects in which our school system —as a system, may be supposed, by some, to be deficient, or to suggest changes that might with seeming advantage be made in it. Neither could there be any propriety, in regarding the subject from a point of view which shows it as a vexed question among our legislators, and a vexing question in its practical workings, in more than one municipality in the province. I suppose the question to be answered in this.—

How can the Common Schools of our own district be made most effective as a means of mental culture and moral elevation to the children of the people?

A fair and full answer to the question will, I think, go to show, that as all classes of the community are benefited by the successful working of a well arranged system of Common Schools, so all classes are to a certain extent, though in different ways, responsible for this successful working. But it is upon those whose duty it is to decide as to the qualifications necessary for the teachers of these schools, and to pronouce judgment as to individual cases—and upon these teachers themselves—their fitness for the work, and their devotion to it, that the success of our educational system *chiefly* depends.

Much has been said of late, with regard to the propriety of gradually raising the standard of requirements in those proposing to become teachers, and a little has been done in that direction.—But far more requires to be done. It may be true, that there are few Common Schools, in which there are pupils so advanced, as to be beyond the teaching of one, who has passed a fair examination as the standard of requirements now is. It may be true too, that it is neither desirable, nor possible that the children of our Common Schools generally, should be carried beyond the simple rudiments of an English education. But it is also true, that even the rudiments of an art or science cannot be well taught by one who has not gone far beyond these rudiments. Any one may teach a child his letters, or drill him in spelling words of an indefinite number of syllables, but to teach a child to read well, one must be able to do far more than to tell the letters, or put the syllables together. A limited knowledge of Arithmetic may suffice for the teaching of the simple rules, the mere mechanical work of adding or multiplying, but only one who is skilled in the art, who understands the science in its relation to other branches of mathematics, can reveal to his pupil the power of figures, or give him an idea of the wondrous secrets of time and space which they may be made to disclose. Any one with a quick eye, may teach a child to trace out on the map the outlines of the various countries, islands, oceans, painted upon it, or make him acquainted by name with the several zones and the parallels that bound them. But to put life and power into the teaching, to carry the child's imagination away from the printed and painted surface, the lines, figures, and mysterous symbols, to that which they represent—the grand real world in which he lives, with all its wonders and changes, one must have a far greater knowledge of the subject, than a child is able to receive.

To imagine that the actual necessities of the pupil, may with propriety limit the resources of the teacher, is to take a very narrow view of the subject of education, to form an unworthy estimate of the importance of the teacher's office. A teacher, knowing only the rudiments that he is expected to teach, and who is content to know no more, must fail in the *right* performance of a teacher's duty. He may announce facts, and explain processes, in as far as he is himself acquainted with them, but he cannot make visible to his pupils—because he cannot see himself—the principles upon which the value of a knowledge of these facts and processes entirely depends.

Besides—uninfluenced himself by the inducement to progress, which an enlarged knowledge supplies, he must fail to give to his pupils the impulse toward self improvement, which is of more value than any amount of imparted knowledge can be.

In this power to influence the minds of his pupils, lies the secret of a teacher's best success. Many of the greatest ornaments of the world of science and letters, might have lived on in obscurity, unconscious of their powers, but for the onward and upward impulse given to their intellectual faculties by some scientific or classical scholar occupying the humble position of a parish school-master. An enlarged knowledge is not the sole source of such influence, but it is as indispensable to its exercise, as are the moral and intellectual qualities which, in a teacher, command a pupil's respect. It will not avail for success where the gift of teaching is not, nor will it stand instead of moral fitness, or a true spirit of devotion to the work, but through it alone can natural gifts be made really available, as a means of intellectual and moral advancement to the children of the people.

Especially it is important that those entrusted with the education of the young, should be morally fit for the office. The relation in which a teacher stands to his pupils, implies more than the mere expansion or cultivation of the intellectual faculties. Directly or indirectly he must exert a powerful moral influence upon them. If not directly exerted for good, it must be indirectly exerted for evil. He can neither divest himself of this power to influence, nor of the responsibility which attaches to it.

They whose duty it is to decide as to the moral qualities necessary in a teacher, need not hint as to what those qualities must be, and even to name them might seem impertinent. There can however be no impertinence in asserting that a departure from the letter or spirit of the law having reference to these qualities, in deciding upon the fitness of individuals for the office, must have an injurious tendency. The standard of requirements in this respect, may be sufficiently high: it must be uniformly adhered to, if our Common Schools are to exert a healthful moral influence on the youth of our country.

That the Board of Examiners should raise the standard of requirements, is not all that is necessary to ensure properly educated teachers for our schools. It may be quite possible to make of the Board of Examiners, and the examination, a bugbear which shall be more powerful to discourage the timid, than to keep back the unprepared. The teachers themselves must have their eyes opened to the desireableness of greater attainments than any board is likely to require of them, in order that they may fill worthily, the honorable position at which they aim. They must prepare for it not merely that they may be able to pass creditably an examination more or less severe, but that they may be thoroughly acquainted with the subjects they mean to teach, and that they may ensure to themselves that mental discipline, necessary to the skilful dealing with the minds of others. They must cultivate a love of knowledge for its own sake, if they hope to excite this love for it in their pupils.

They must have an exalted idea of the teacher's office, not as reflecting dignity on those who hold it, but as requiring much at their hands. It must not be assumed lightly, nor from unworthy motives. It must not be coveted as an easy and pleasant position. A pleasant position it is, to one who loves the work to which it introduces him, but it is an easy—an unlaborious position to none. Even when use and wont, and a consciousness of fitness for his sphere have removed out of the teacher's way the obstacles which at first encumber his path, his task is still a laborious one, requiring watchfulness, patience, firmness, and great power of endurance mental and physical. To one who has no aptness for teaching, no love for it, no success in it, teaching is a most painful drudgery.

The office of teacher must not be assumed in a mercenary spirit—just so much time and teaching given for so much money received. He who takes it in such a spirit will fail every way. He will disappoint, and he will be disappointed. If he is conscientious in the discharge of his duties, and at all successful in his work, he may go on with pleasure to himself and others for a while. But when the day of reckoning comes—when the balance is struck, he will find that the hard cash justly considered his due, will by no means remunerate him for the labor bestowed. He will say, "With less wear and tear I might have earned more at some other work," and it will be the truth. The outlay of the teacher is not of a kind that can be estimated in dollars and cents, and dollars and cents, even were they more liberally awarded to the teacher than they are among us—could never make to him a full and satisfactory remuneration.

Do not let me be misunderstood. We live in a world in which to the greater number of us, our daily bread must, in one sense, be the first consideration. To suspect as mercenary all who look to the profession of teaching as a means of obtaining a livelihood, would be foolish, as it would be unjust. Of a more sacred profession it is said "They who minister at the altar shall live by the altar." A teacher may with propriety permit himself to look to his profession as a means of obtaining honorable bread. But he must assure himself that if to obtain bread be his sole motive in choosing his profession he need never hope to become a successful teacher in the highest sense. His success must be the result of earnest self-denying labor which bread cannot pay. Unless he so loves his work, or is so impressed with its importance that he is willing to accept success in it, as the best part of his remuneration, he will be disappointed.

Upon this part of the subject—the fitness of teachers for their work—one might enlarge indefinitely. In one sense it may be said to cover the whole ground. As soon as the majority of our common schools shall be under the direction of teachers who have undertaken the work in a right spirit, from right motives, who have thoroughly prepared themselves for it and earnestly devote themselves to it, then shall we see the object aimed at by the system in a fair way to be effectually attained.

Again, measures should be taken to make the office of teacher in our Common Schools a permanent one. In passing from the care of one inexperienced person to that of another, schools must suffer, both as to instruction and discipline. Even when the skill and attainments of the successive teachers may be undoubted, this frequent change must interfere with the progress of pupils. Time must be lost before the stranger can ascertain their standing, so as to class them properly. When his mode of teaching differs from that of his predecessor, it must be some time before they grow accustomed to it, so as to respond to his efforts in their behalf. Progress must be irregular and fitful. The knowledge thus acquired will be fragmentary, and easily forgotten. Nothing can be well learned, and what is worse no proper habits of study can be formed, no love of study cultivated.

With regard to the teachers, they can hardly be expected to throw themselves heartily into a work, which three or four months may limit. Half the time will be over before they find themselves thoroughly engaged in their duties, or before they see any real progress in their pupils. To acquire a reputation as a skilful and successful teacher, is not of course the highest motive that can actuate one in the performance of duty, but it is still a legitimate motive. A teacher who looks forward to the close of the term as the end of his connection with his pupils, can have little hope that his ambition in this respect will be gratified. The progress of a school from term to term may and ought to be marked, but it is not in the first term that the progress is greatest. In those schools, in which every term is a teacher's first, the progress can scarcely be so evident, as to reflect honor on either teacher or pupils.

Besides, even on the minds of conscientious teachers, the knowledge of the transitory nature of their connection with their pupils, must, in another way, re-act unfavorably. It will not be unlikely to tempt to an evading of difficulties both in the government of their pupils, and in their instruction. It is often easier to endure passively what is disagreeable, or even what is positively painful or wrong, than to take a firm stand against it, and the thought that a few weeks or months will put an end to the vexation as far as he is concerned, will often to a teacher prove a temptation to overlook what merits reproof in his pupils. The injurious effects of such a course must be too apparent to require to be enlarged upon here.

Notwithstanding the very evident disadvantages which attend these frequent changes, the cases in which teachers continue year after year in the same school, are the exceptions, not the rule. Indeed the cases are rare in which young persons are found preparing themselves for the office, with any idea of making it a permanent one. No such thing seems to be expected from them. It seems to be understood, that a young man, when his own school days are over, may very well spend a winter or two in teaching, until he shall decide as to his future occupation, or in order that he may obtain means to pursue his professional studies. A young woman teaches three or four months in summer in order that she may gain money with which to dress herself neatly during the rest of the year, and it is all as it should be with our Common Schools in the opinion of people generally.

But unless that is true with regard to the profession of teaching, which is true of no other profession, that the skill and experience which is the result of long practice cannot be made available in securing success in it, all this should be quite otherwise. Our Common Schools can never become the power for good, which they might be made in the country, until the teacher's office is made a permanent one.

With this frequent change from school to school, no doubt the restlessness and incompetency of teachers may have something to do. Young people becoming teachers, with no just sense of the responsibilities which they assume, or of the difficulties which they must encounter, grow impatient of the circumstances in which they have placed themselves, and choosing to believe, that what is unpleasant in their position, arises from something peculiar to the school or neighborhood, rather than from their own incompetency, they seek new situations, only to find new troubles. Higher requirements on the part of the Board of Examiners, would tend to correct the evil in as far as it is thus occasioned, by discouraging young persons who desire the office of teacher only that they may escape from the performance of distasteful duties at home, or that they may enjoy what seems to them a more desirable social position than they could otherwise occupy.

But the other circumstance out of which these frequent changes seem to arise—the fact that few enter upon the work of teaching, with any thought of making it their life's work—cannot be so easily dealt with. The cause must be apparent to all. It is not surprising that few are found willing to devote their energies to a profession however suited to their abilities and tastes, which offers no reasonable prospect of affording a livelihood. This ought not to be true, of even the *Common* Schools, in the long settled districts of Canada, but true it is.

The existence among us of prosperous academies and colleges, is evidence that the cause of education has advanced with the material prosperity of the country, but it is chiefly as regards these higher institutions of learning that the advance is apparent. Many of the drawbacks incident to the schools of a new country—the short summer or winter term—the giving place of one chance teacher to another—the "boarding round" system as it is called, and many other defects in arrangement, still cling to our Common Schools generally, and unite to hinder their efficient working.

It is time that these drawbacks were removed from the schools of the long settle districts. It would be a step in advance if they could be kept open longer each season. A prospect of being employed during the greater part of the year, would, even at the present rate of remuneration encourage suitable persons to qualify themselves for the work of teaching. But in schools generally, the rate of remuneration ought to be increased.

While it is important that teachers should guard against a mercenary spirit in seeking the office it is equally important that their employers should avoid that spirit of false economy which inclines too often to cheapen a teacher's services. It is true of teaching as it is true of other things—that which is valuable must be paid for. And it is true also, that the cheapest teachers, like other cheap wares, often prove the dearest in the end.

Let it be repeated here. Our Common Schools will become the power for good in the country which they ought to be, when the majority of them shall be under the direction of faithful and efficient teachers, and that happy day will not be very distant, when the office of teacher is made a permanent and remunerative one.

To be continued.

ARITHMETIC.

(*Continued.*)

At every stage of the pupil's advancement in arithmetic the following three things should never be lost sight of: 1st. A correct knowledge of the principles of numbers. 2nd. How to work numbers with celerity and correctness. 3rd. Their multifarious applications.

These three things should be perseveringly attended to, from the very beginning of arithmetical training.—In doing this the language and manner of the teacher should be such as to suit the scholar at each degree of advance, and the progressive increase of his knowledge. At first, to be successful, there must be great plainness, so as to make the language level with his capacity; and the utterance should be distinct, bland and telling. This is a part of the art of teaching far too little studied by our educators. Yet it is one of the most special, and of the very first that should be particularly studied. Unless a teacher's language be studiously accommodated to the capacity and knowledge of his pupil, how can he expect success? Of what value is instruction if imparted in language not understood, or but very imperfectly comprehended? Of what value is an explanation, or an illustration, if the master's ideas are so expressed as not to bring the thing explained within the reach of the child's capacity, or if his knowledge of the subject, a part of the subject under illustration, is *not sufficient* to make the illustration clear to him—so well understood as intelligently to enable him to do the thing himself?—How often happens it that the use of a single word not well understood or part of an explanation out of place, or not commenced at the proper starting point, perplexes the student, and mystifies what was intended to be made plain—comprehensible?—Verily teaching and expounding are of no avail, except so far as they benefit the scholar, throw light on his path, and enable him, by his own steady efforts, to profitably advance.—Teachers, look well to your language, to your words,—to their choosing and using. Study well the proper starting points of every part of your instructions. All the parts of instruction should have their legitimate sequence —each brought up and carried on in its right place.

Remember that the teacher's language requires a teaching character—as well as his mind a teaching mould. However distinct may be our views, however vivid our conceptions, however correct and extensive our knowledge of the subject we teach, how often do we fail in calling up words, and momently divising forms of expression faithfully to pourtray our thoughts and sentiments, enabling us successfully to effect our object? This is a thing of daily occurrence with the best educators: much more must it be so with those beginning the profession.

Let us now proceed and give a few farther hints on teaching the fundamentals of Arithmetic.

Pupils should have now reached a stage to admit of giving a still farther variety of examples. The clearer and more correct their knowledge of the properties of numbers is, the better will they be prepared for the business applicative parts of arithmetic. It is very important that, as they advance, as much light as possible be thrown on the relations of numbers in multiplying and dividing them. Rightly to understand and masterly to know them in calculating, is of vast advantage to them. The more their knowledge on these various relations is enlarged, the more are their minds brought under the guidance of reason, the more does arithmetic become to themselves a training instrument; and the more does their own independent working capacity strengthen, —thus hastening on development and a rational well-grounded advancement.

Multiplication and Division.

The relations between multiplier, multiplicand, and product; and between divisor, dividend and quotient should by little and little, be expounded and examplified to them—making each of the illustrations suit each stage of mental development and acquired knowledge. Let me direct attention to a few of the most suitable at this stage.

1. To increase or lessen the products of numbers, we increase or lessen the multipliers. For example. Multiplying 32 by 4 gives 128. Now it is evident that multiplying by 3 times 4, or 12, would give three times this answer, i, e, 384; $32 \times 12 = 384$. Again, if we lessen the multiplier 4 by 2, we have $32 \times 2 = 64 = \frac{128}{2} = 64$ equal to half the first product. Illustrate these relative properties till well understood, and the scholars are able readily to work processes. Begin with numbers which their minds can comprehend: as 6 by 2, 8 by 5, 10 by 6, &c. and reason on each example, till, in turn, they can correctly reason to you. Then give them examples to be worked, and to exercise their own minds upon them, that they may be able to explain to you when called up. Then, when this exercise is well understood, how the product is affected by increasing or diminishing the multipliers, show by illustrations how it is increased or decreased by increasing or decreasing the multiplicand, as follows:

3) $24 \times 5 = 120$

$8 \times 5 = 40 = \frac{120}{3} = 40 = \frac{1}{3}$ of the product of 24 by 5.

Again: $24 \times 5 = 120$, and 24 increased by $3 = 72$, and multiplied by 5 is $360 = 120 \times 3 = 360$. Multiplied $425 \times 12 = 5100$; double the multiplicand $425 = 850 \times 12 = 10200 \div 2 = 5100$, = to the first product.

Where they well understand how products are thus increased and decreased in proportion to the increase or decrease of the factors; show that if one factor is increased as many times as the other is diminished the product remains unaltered. Ex. 9 multiplied by $6 = 54$; the double of 9 is 18; and the half of 6 is 3: 18 multiplied by 3 is 54, the same product; for as 9, the multiplicand, is increased so the 6, or multiplier, is decreased. Ex. Multiply 25 by 14; the product is 350; increase the multiplier 5 times, and decrease the multiplicand 5 times; the product will be the same, viz., 350: for 5 times 14 is 70, and the fifth of 25 is 5. 70 multiplied by 5 is 350, the same product as 25 multiplied by 14.

Farther Exercises.

N. B. Place a factor in each of the vacant spaces, so that the products shall be equal.

$5 \times 9 = \frac{3}{4} \times (\ )$; $16 \times 12 = (\ ) \times 1\frac{3}{4}$; $49 \times 3 = \frac{4}{7}\frac{9}{9} \times (\ )$.
$18 \times 6 = 2 \times 6 \times (\ )$; $36 \times 8 = \frac{3}{4}\frac{6}{6} \times (\ )$; $350 = 17 = \frac{35}{10}\frac{0}{0} \times (\ )$.

2. Observe that to obtain the same quotient in dividing by different divisors, both the divisor and dividend, must be increased or diminished by the same figures, i. e, they must be equally increased or decreased; as may be required: for example $72 \div 12 = 6$ quotient. If I double the 72 I must also double the 12 to get the same quotient, viz. 6. If I lessen the 72, dividing it by $4 = 18$, the divisor 12 must, to get the same quotient, be also divided by $4 = 3$; and $18 \div 3 = 6$, the same quotient, as $72 \div 12$ gives.—Again, if I wish to give a multiplicative increase to the quotient 6, I have to give a proportionate decrease to the divisor, as follows: dividing 96 by 8 gives 12 quotient; I wish to increase the quotient 12 three times $= 36$: to get this quotient by the same dividend, (96,) the divisor must be 3 times less, namely $\frac{8}{3} = 2\frac{2}{3}$; and 96 divided by $2\frac{2}{3}$ gives 36, the quotient required; or the dividend may be increased, instead of the divisor decreased, by three, thus $96 \times 3 = 288 \div 8 = 36 =$ the quotient required.

3. In every Division sum the dividend is the product, of which the divisor and the quotient are the two factors.—

In *multiplication*, multiplier × multiplicand = product;

In division, quotient × divisor = dividend: therefore every truth which can be asserted of the parts of a multiplication sum, can be asserted in another form which will be applicable to division.

Example.

mult. mult.

1. { 32 × 7 = 224 product, in multiplication.
   pro. 224 ÷ 7d = 32 multiplicand; and
   224 ÷ 32 = 7 the divisor,

2. { 42 × 12 = 504 product.
   504 ÷ 12 = 42 multiplicand; and
   504 ÷ 42 = 12 multiplier.

3. { 9936 × 23 = 228528 product.
   228528 ÷ 23 = 9936 multiplicand; and
   228528 ÷ 9936 = 23 multiplier.

Such exercises as these, if well explained, will help much in leading scholars to a correct knowledge of the theory of processes. Every step of a process has its principle; and it is the duty of the educator to show them how the principle, worked, produces results; how the numeral truth, that $3 \times 9 = 27$; and how the reverse processes $27 \div 9 = 3$; and $27 \div 3 = 9$, have all a processal agreement. For if 27 be the sum of three nines; it must also be the sum of nine threes. Analyzing 27 by 9, gives $9 \times 9 \times 9 = 27$; and by 3 gives $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 = 27$. Or, taking a larger number, say 9936, to be increased 23 times gives a result of 228528. This product decreased 23 times by 9936 is exhausted—proving the process to be correct; otherwise; 228528 divided by 23, gives 9936; or by 9936, gives a quotient of 23.

A few such examples will lead them to see how processes in multiplying and dividing check and prove each other.

But I would strongly recommend, accustoming them to prove the working of questions or of processes at each step of advance. This is a much better way than proving the ultimate results of processes. It is carrying the proof along with the work. To illustrate this, take the following examples:

42769
75

5) 213845 product
.....
42769 proof

7) 299383 product
.....
42769 proof

3207675 ans.

2993830 proof of adding.

75) 3207675 (42769
$300 \div 4 = 75$ = proof of the multiplying

$20 + 300 = 320$ = do. of the subtracting.

207
$150 \div 2 = 75$ = do. of the multiplying.

$57 + 150 = 207$ = do. of the subtracting.

576
$525 \times 7 = 75$ = do. of multiplying.

$51 + 525 = 576$ — do. of the subtracting.

517
$450 \div 6 = 75$ = do. of multiplying.

$67 + 450 = 517$ = do. of subtracting.

675
$675 \div 9 = 75$ = do. of multiplying.

In these examples I have put down the different steps of proof for plainness. In training pupils this is not necessary. By a little practice they will be able to test each step at sight—writing no figures, except in very large operations.

JOHN BRUCE,
Inspector of Schools.

(To be continued.)

Always in Trouble.

There is a variety of gifts in teaching; and most good teachers are characterized by some peculiar qualification which is mainly the secret of their success. And not only does this variety hold good in regard to the means by which teachers succeed, but it also pertains to their deficiencies and faults which prevent success. Some are wanting in firmness and decision; others, in kindness and sympathy. Some have neither judgment nor tact; others are cruel, or indolent, or wanting in enterprise. And thus it would be very easy to make the list a long one. But of all the faculties which characterize teachers, we know of no one whose legitimate fruit, sooner or later, is so surely failure, as what may appropriately be called the faculty of always being in trouble. We do not mean to say that teachers are the only persons who have this faculty. Far from it. It is found in people of every calling in life; but in occupations where its possessors come less in contact with the public and their interests, and whose duties are less delicate, it does not always become so manifest nor produce consequences so lasting and injurious, as in the case of the teacher.

This faculty may not, perhaps, be defined with precision in mental philosophy, nor in the Phrenological Guide, but it surely exists. Of this, fellow teacher, you probably have not the slightest doubt. You have known such teachers. If there is any one thing they can do better than another, it is, to use a common, but a very meaning expression, to get into hot water. It is their forte; and they certainly appear to be very ambitious to magnify their calling. Now it is a very unfortunate combination of qualities and habits that constitutes such a character. It is a constant source of unhappiness to the teacher, making his life one continued scene of fretfulness, trouble, and dissatisfaction; and keeping up a state of discontent and turmoil in the school and neighborhood. And it is the more to be regretted, from the fact that it is all unnecessary and easily avoided by the exercise of a moderate degree of discretion and common sense.

There are teachers who have very exaggerated and very ridiculous ideas of the authority with which they are vested, upon becoming the presiding geniuses of the schoolroom. To make a display of that authority, and to create a sensation, seem to be the leading object of their work. It almost seems as though they supposed schools were established to give them an opportunity to show that they are masters, and that they wield the sceptre in their little kingdoms. Such teachers will fail of doing a good work, and will have trouble for various reasons. They have no true conception of their duties as teachers, and cannot, therefore, discharge them acceptably. In the discipline and management of their schools they will overdo, in every sense of the word. That will engender unkind feelings on the part of the pupils, and make antagonists of those who ought to be friends and co-workers. The malicious and the mischievous will feel irritated and provoked, and will accept the teacher's indiscretions and officiousness as a challenge for a trial of skill and mastery. Even the best of pupils will gradually, and sometimes unconsciously, assume an attitude which, if not hostile, is certainly wanting in cordiality. In such circumstances, the relation between the teacher and pupil promises little good, but much harm. Not only will that degree of harmony and good feeling requisite for a successful school be wanting, but aversion and hostility will continually exist. This will greatly impair and generally destroy the usefulness of any school. It is very true, we admit, there often will be conflicts in school, and the teacher will be obliged to grapple with opposition and insubordination, and to put them down effectually. But no teacher can afford to be continually at war with the adverse elements of his school. The campaign against them may be vigourous and decisive, but it should not be a protracted one. If a peace cannot be conquered speedily, it will be better to change tactics or generals.

This class of teachers are very frequently affected with jealousy of any interference, real or imaginary, with their rights and authority. Of course they are on any thing but pleasant terms with school committees, and the parents of their pupils. Not unfrequently there is a state of mutual recrimination and backbiting. Now, in the first place, every person who proposes to enter the school room as a teacher, should previously understand fully the relation, duties, and rights of committees, teachers, and parents, respectively, as defined by the law

of the State where employed; and in the next place, such persons should know that it is possible for a teacher to be supreme in the school room, and at the same time to recognize the rights of other parties, so far as they actually exist, and to respect them accordingly. The teacher who is unable to reconcile the existence and compatibility of the rights of others with his own, may, and most likely will, often quarrel with the school committee or superintendent; while the one who fully understands and acquiesces in the relation of all parties will, with proper discretion, seldom find occasion for any considerable trouble in that direction. We know very well that all kinds of people have the charge and oversight of schools; but it cannot be denied that they are generally men of intelligence who share to some extent at least, the public confidence; and we strongly incline to the belief that they are, for the most part, as easy to deal with as any class of our fellow men.

We earnestly beg of you, therefore, fellow teacher, if you have any trouble with your committee, not to prosecute a quarrel until you have seriously enquired who is the agressor; and also whether you are entirely free from a foolish and perhaps groundless suspicion of interference, when no interference is attempted or meditated. Remember that many people suffer more from the anticipation and dread of troubles that never come, than from all the troubles that actually take place.

A similar spirit of jealousy is often exhibited in reference to the interference of parents. We are free to acknowledge that many parents are meddlesome in school matters, assuming not only to advise the teacher, but also to dictate to him in the discharge of his duties. The provocations from this are frequently such as to require great discretion and magnanimity to rise above them. Bear in mind that parents have a peculiar interest in their own children, and that it is one of the weaknesses of many parents, that they deem it necessary to superintend, and to have a voice in all that is done for their children by others. Furthermore, schools, and especially public schools, are considered as a kind of public property in the management of which every one has a right to take part. Such being the fact, it is very natural that injudicious parents should often seem altogether too officious in their intercourse with teachers and schools. Unpleasant as such intermeddling is, it need not generally be a source of much trouble or anxiety to the teacher. It is to be treated on the let-alone-principle. If resented or allowed to bring on disputes or altercations, it surely will increase tenfold; for a testy temper and angry words in a teacher are a sufficient provocation for fault-finders to do their worst. It is by such fuel that the flame of contention is usually fanned to its intensest heat. Not so, however, if it is met with an unruffled temper and with respectful silence. It can not flourish under neglect. It is a good rule to listen calmly and attentively to all the advice, and abuse even, that may be offered, or heaped upon you; and then, avoiding immediate action if possible, to follow your own judgment.

Many teachers very foolishly bring much trouble upon themselves by injudicious talk in school, or before their pupils elsewhere, about their parents. A teacher of some promise, occupying a good situation, had occasion to reprove a lad, and to make some changes in his studies which his own good and that of the school seemed to require. The mother of the boy injudiciously made some petulant remarks about it, but would probably propably have forgotten the whole affair in a month, had the matter ended there. But her remarks found their way to the teacher's ears, whose want of judgment allowed him to bring the matter up before the school, and to indulge in violent language, abusing the boy, his mother, and meddlers in general. The result was he lost his situation, and thereby received a just reward. Pupils should never hear from their teachers an unkind or disrespectful word about their parents.

It should be a principal object with the teacher, to keep out of trouble and to live on terms of peace and cordiality with pupils and parents, and with all others concerned. This must be done by the exercise of prudence and good judgment, and by a desire to deal fairly and justly with all. Care must be taken, however, not to vacillate where promptness is required, nor to shrink from the line of duty; for where that plainly leads he must go, cautiously, indeed, but fearlessly. But most of the troubles which this class of teachers encounter may be avoided by a determination to keep clear of them, as we have hinted above. Learn a lesson from the folly of the serpent, which is not always "wise." When a coal of fire is held towards one of our common field snakes, the spiteful reptile darts its forked tongue about it, and then, in wrathful folds, encircles it with its whole body. Result: A burnt offering uncalled for and ineffectual. So do not thou, fellow teacher. Repress the controversial element in your character; let your policy be pacific but firm; and by your fidelity and persistent magnanimity win the good-will and approbation of pupil and patron. A. P. S. —*Connecticut School Journal.*

OFFICIAL NOTICES.

NOMINATIONS.

LAVAL NORMAL SCHOOL.

His Excellency the Governor General in Council was pleased, on the 13th December, to appoint Daniel McSweeney, Esquire, English Teacher in the Model School annexed to the Laval Normal School and Adjunct Professor in the Normal School, *vice* Andrew Doyle, Esq. resigned; and also to appoint J B. Cloutier, Esq., Adjunct Professor in the Laval Normal School.

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ERECTIONS &c. OF SCHOOL MUNICIPALITIES.

His Excellency the Governor General in Council was pleased, on the 12th December last, to detach from the Township of Morin, in the county of Argenteuil, the 7th, 8th, 9th, 10th and 11th ranges, and to annex the same to the School Municipality of Beresford.

His Excellency the Governor General in Council was pleased, on the 11th January last, to amend the Order in Council of the 26th July, as follows:

To detach from the school municipality of St. Irénée, in the county of Charlevoix, the concession known as Ste. Magdeleine, extending from the land of Vital Bouchard to the land belonging to Louis Maltais, exclusive, and to annex the same to the School Municipality of Malbay, in the said county.

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DIPLOMAS GRANTED BY BOARDS OF EXAMINERS.

MONTREAL BOARD OF CATHOLIC EXAMINERS.

1*st Class Elementary* (*E*).—Mr. Thomas Levan; (*F*) Miss Marie Vitaline Demers.

—

QUEBEC BOARD OF PROTESTANT EXAMINERS.

1*st Class Elementary* (*E*).—Miss Jane McKenzie.

2*nd Class Elementary* (*E*).—Messrs. James A. Hume, Neil John McKillap, Francis Reynolds; Misses Margaret Brodie, Sarah Johnston, Margaret McKillap, Mary McKillap.

1st to 8th Nov. 1864.

D. WILKIE,
Secretary.

—

RICHMOND BOARD OF EXAMINERS.

1*st Class Elementary* (*E*).—Miss Hanna Armatage; (*F & E*); Miss Mary Ann Armstrong; (*F*) Misses Marguerite Labonté, Luduile Gervais and Marie Brady.

2*nd Class Elementary* (*F*).—Miss Philomène Marcotte.

2nd Aug. 1864.

1*st Class Elementary* (*E*).—Miss Mary Ann Morrill; (*F*) Misses Philomène Champoux and Mathilda Bouthillette.

2*nd Class Elementary* (*F*) Misses Louise Vigneault, Julie Belisle; (*E*) Misses Adelia Gilman, Flora Shaw, Margaret Cassidy, Sophia Daying, Josephine E. Smyth, Mary Ann Hall, Lelia L. F. Rice; Mrs. Susanna Nelson *Hull*; and Mrs. Orpha Elizabeth Turner *Hammond*.

1st Nov. 1864.

J. H. GRAHAM,
Secretary.

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DONATIONS TO THE LIBRARY OF THE DEPARTMENT.

The Superintendent acknowledges with thanks the following donations to the Library of the Department.

From Henry Judah, Esq. Commissioner on Seignorial Tenure, *Cadastres abrégés des seigneuries de Québec*, 2 vols. *Cadastres abrégés des seigneuries de Montréal*, 3 vols. *Cadastres abrégés des seigneuries des Trois-Rivières*, 1 vol. *Cadastres abrégés des seigneuries de la Couronne*, 1 vol.

JOURNAL OF EDUCATION.

MONTREAL (LOWER CANADA), JANUARY, 1865.

To our Subscribers and the Contributors to the Teachers' Savings Fund.

We have to request that our subscribers who have not yet paid up will send their remittances as soon as possible to A. de Lusignan Esq., Clerk of Accounts and Statistics, Education Office, who will also receive all Premiums due on the Teachers' Savings Fund.

In sending money by mail, Postage Stamps should be used when the amount is less than one dollar. Teachers who receive the Journal for half a dollar may club together to send their remittances whenever they can conveniently do so. Coin should not be sent by letter as loss through increased postage is thereby occasioned.

We have much pleasure in recording the fact that during the year just ended many Boards of Commissioners have subscribed to the Journal for the schools under their control.

Subscribers to the Savings Fund are reminded of the necessity of paying all Premiums during the year to which such Premiums apply. Premiums for 1864, now overdue, shall nevertheless be still credited provided they be sent within a reasonable time.

All Teachers should contribute to the Savings Fund, and also subscribe to the *Journal of Education*. The reasons that might be urged in support of the first part of this recommendation are so obvious that they will naturally suggest themselves; to recapitulate them here would, therefore, be superfluous. As to the *Journal of Education*, we may say that the information to be found in its columns is of the highest practical importance to all teachers, and none should be without it.

Notices of Books and Publications.

THE CANADIAN JOURNAL OF INDUSTRY, SCIENCE AND ART; Printed for the Canadian Institute by Lovell and Gibson, Toronto.

We have received the November number of this excellent scientific quaterly. It contains an article by Professor Wilson on the Physical Characteristics of the Ancient and Modern Celt of Gaul and Britain; another on Thallium, by H. C.; a bibliographical review, a translated article on Plants and the Atmosphere, from *La Revue des Deux Mondes;* and Meteorological Tables and observations for Toronto.

The subject of which Professor Wilson treats in this number is one much in vogue at present with *savans* in both hemispheres. As all the world knows, craniology has risen to an important place in modern science; it is now, in fact, one of the favorite branches studied by naturalists and especially by *anthropologists*. Accordingly, on all sides, the learned are digging. Ruins, catacombs, long forgotten cemetries, are ruthlessly upturned and ransacked for those mouldy treasures which are to solve the great ethnical problems of the day. While investigating and comparing the peculiarities of *crania* of various races inhabiting the British Isles, the idea has been entertained in scientific circles that if the pure Celtic type could be definitively recognized and separated from its modified forms and sub-types, a promising way would open to the settlement of many questions touching the early history and migratory movements of this ancient people, and thence possibly to ethnological enquiries into the history and characteristics of pre-existing races. Unfortunately, however, the subject is beset with difficulties. It is the opinion very generally received among ethnologists that the pure Celt does not now exist free from admixture with other races; and it therefore follows that if the unmixed Celtic skull can be identified at all, it can only be done through the scientific classification of *crania* of past generations. Hence the *furor* adverted to above.

But if investigations into the craniological peculiarities of ancient peoples be attended with so much inconvenience and trouble, science has hit upon a truly expeditious and agreeable method of examining contemporary heads. What, indeed, could be more natural under the circumstances than to have had recourse to that useful member of a well regulated community—the hatter? Let us not however anticipate Prof. Wilson in his remarks on this subject:

"The hatter in the daily experience of his business transactions, necessarily tests the prevalent form and proportions of the human head, especially in its relative length, breadth, and horizontal circumference; and where two or more distinct types abound in his locality, he cannot fail to become cognisant of the fact. One extensive hat manufacturer in Edinburgh, states that 'the Scottish head is decidedly longer, but not so high as the English. In comparison with it the German head appears almost round.' But comparing his scale of sizes most in demand, with others furnished to me from Messrs. Christie, the largest hat makers in England, the results indicate the prevalent Scottish size to be 23⅜ inches; four of this being required for every two of the next larger and smaller sizes; whereas in assorting three dozen for the English trade, Messrs. Christie furnish four of 21½, nine of 21¾, ten of 22, and eight of 22⅜ inches. Mr. Rogers, of Toronto, in assorting three dozen, distributes them in the ratio of five, seven, nine, and five to the same predominant sizes, and allows four for the head of 23 inches in circumference, the remainder being in both cases, distributed in ones and two between the largest and smallest sizes, ranging from 23¾ to 20¾ inches. The summary of inquiries among the principal hatters of Boston is as follows: 'Larger hats are required for New England than for the Southern States. To New Orleans we send 20⅝ to 22⅞; and to New Hamsphire 21⅝ to 23 inches.' One extensive New England manufacturer adds: 'New England heads are long and high; longer and higher than any European heads. British heads are longer than Continental. German and Italian heads are round. Spanish and Italian very small.'

"Let us now see if this experience acquired in the daily observation of the trader and manufacturer will yield any available results in reference to our present inquiries. An ingenious instrument, known by the name of the *Conformiteur*, was brought into use in Paris, I believe about twenty years since, and is now employed by many hatters, on both sides of the Atlantic, for the purpose of determining the form and relative proportions of the human head, so far as required by them. The instrument fits on the head like a hat; and, by the action of a series of levers encircling it, repeats on a reduced scale, the form which they assume under its pressure. By inserting a piece of paper or thin card board, and touching a spring, the reduced copy is secured by the impress of pins attached to the ends of the levers.

* * *

"Taking advantage of the precise data furnished by the *Conformiteur*, I have availed myself of the peculiar facilities which Canada supplies for instituting a comparison between the diverse races composing its population. Upper Canada is settled by colonists from all parts of the British Islands. In some districts Highland, Irish, German, and 'Coloured' settlements perpetuate distinct ethnical peculiarities, and preserve to some extent, the habits, and usages, and even the languages of their original homes. But throughout the more densely settled districts and in most of the towns, the population presents much the same character as that of the larger towns of England or Scotland, and the surnames form in most cases the only guide to their ethnical classification. In Lower Canada the great mass of the population is of French origin, but derived from different departments of the parent country; of which Quebec is the centre of a migration from Normandy while the district around Montreal was chiefly settled by colonists from Britanny. The French language, laws, religion, and customs prevail, preserving many traits of the mother country and its population, as they existed remote from the capital of the Grand Monarque, and before the first French Revolution. The establishment of the seat of the Provincial Government at different times in Montreal and Quebec, and the facilities of intercourse between the two cities, must have helped to mingle the Norman and Breton population in both. Nevertheless, the results of my investigations tend to show that a striking difference is still recognisable in the predominant French head-forms of the two cities.

"My first observations, with special reference to the present inquiry, were made at Quebec, in 1863, when, in co-operation with my friend Mr. John Langton, I tested the action of the conformiteur on heads of various forms, and had an opportunity of examining and comparing nearly four hundred head-patterns of the French and English populations. As each of the patterns had the name of the original written

upon it, a ready clue was thereby furnished for determining their nationality. Since then, in following out the observations thus instituted, I have carefully examined and classified eleven hundred and four head-shapes; including those of two of the principal hatters in Montreal, and of one in Toronto. In testing their various differentiæ, I have arranged them by correspondence in form; by common origin, as indicated by French, English, Welsh, Highland, Irish, and foreign names; and by predominant malformations in those markedly unsymmetrical. The first noticeable fact in comparing the head-forms of the Quebec population was that they were divisible into two very dissimilar types: a long ovoid, and a short, nearly cylindrical one. This is so obvious as to strike the eye at a glance. I accordingly arranged the whole into two groups, determined solely by their forms, without reference to the names; and on applying the latter as a test, the result showed that they had been very nearly classified into French and English. In all, out of nearly a hundred head-forms marked with French names, only nine were not of the short, nearly round-form; and no single example of this short type occurred in one hundred and forty-seven head-forms bearing English names. A more recent examination of patterns from Montreal led to a very different result. There, where out of the first fifty English head-forms I examined, one example of the short globular type occurred; out of seventy French head-forms (classified by names,) only eleven presented the most prevalent French, head-type of Quebec. But the French head of the Montreal district though long, is not the same as the English type. It is shorter, and wider at the parietal protuberances, and with a greater comparative frontal breadth than what appears to be the Celtic sub-type of the English heads, though also including some long heads of the latter form. So far, therefore, it would seem a legitimate inference from the evidence, that the brachycephalic and nearly globular head of the Quebec district is the Franco-Norman type; while the longer French head of the Montreal district is that of Brittany, where the Celtic element predominates."

ROBERTSON.—The Galt prize Essay—An essay on Common School Education; By Miss Margaret Robertson, Sherbrooke, 1865, 26p.

We begin in this number the reprint of this very interesting essay. It is well written and is alike creditable to the Teachers' Association, the author and the generous donor of the prize.

WEBSTER.—*An American Dictionary of the English Language.* By Noah Webster, LL. D. Thoroughly revised, and greatly enlarged and improved, by Chauncey A. Goodrich, LL. D., etc., and Noah Porter, D. D., etc., Springfield, Mass.: G. & C. Merriam. Royal 4to. pp. lxxii., 1768.

This great standard work has again passed through another edition, revised, enlarged and embellished. Lexicographers, orthoëpists and philologists deeply versed in their respective departments of linguistic science, have been employed in removing the dust of nearly forty years from the well-earned laurels of Noah Webster and in adding fresh lustre to their imperishable glory. Not only have imperfections and blemishes disappeared before the indefatigable exertions of his revisors, but the Herculean task of remodelling the entire work has been successfully accomplished, the celebrated *definitions* even—wherein consists Webster's acknowledged superiority—having been rendered more terse and unimpeachable. Few persons not practically acquainted with the business of preparing works of reference for the press and with the *minutiæ* of the Editor's duties can form an accurate idea of the immense amount of labor involved in the reconstruction of a modern quarto dictionary. Besides what may be properly designated as the natural changes continually occurring in a living tongue, the uninterrupted march of science necessitates the constant coining of strange expressions that not only

"Would make Quintilian gape and stare,"

but startle Dr. Johnson himself out of all sense of propriety. Innovation too, the bugbear of lexicographers, is also constantly at work undermining the very pillars of the language. It is to no purpose that against its incessant assaults, all the classic volumes in the vernacular are heaped up into a rampart, huge as the Great Wall of China and almost as worthless for defensive purposes. The tide of neologism cannot be stayed. As even the most fastidious dictionary can be no more than a mere reflex of spoken language, it must perforce submit to usage and note down popular eccentricities. Accordingly we have, in the work now before us, the formal though qualified recognition of such verbal *parvenus* as *Skedaddle*—an expression by-the-by said to be of Swedish or Danish origin and not of classic birth as learned essays have been written to prove.—It must not however be inferred from this that all neologisms, however whimsical, have found a place in this revised edition; on the contrary, unauthorised or lawless expressions have been as far as possible excluded, yet its vocabulary includes 114,000 words, or 10,000 more than are to be found in Worcester.

Notwithstanding the general excellence of Webster's Dictionary; it is undeniable that in several important respects it was susceptible of improvement. Some of the imperfections here alluded to were inherent in the work itself, others were due to the changes brought about by time. These objectionable features the present owners of the copyright have spared no pains nor expense to remove effectually. In the department of etymology the recent investigations of philologists had left the labors of Dr. Webster—learned as they undoubtedly, were in his day—at the very threshold of the science. To supply this deficiency, the services of Dr. Mahn, a distinguished comparative Philologist of Prussia, were retained and the result of five years of unremitting labor on his part are now before the public. The general revision of the whole work was conducted under the immediate supervision of Prof. Goodrich until the death of that gentleman in 1860, when Prof. Porter succeeded him. The staff of collaborators and assistants whose services have contributed to the success of the present undertaking included men eminent in almost every department of science, art and literature. We regret that we have not space to bestow even a passing remark on their respective labors. It must suffice to say that to Prof. Dana of Yale College, was confided the task of revising the nomenclature appropriated to the divers branches of natural science, to Capt. Craighill, of West Point, that of examining critically the glossary of military terms, to Dr. Mason and Mr. Dwight the duty of scanning those expressions dear to artists and the Muses, while the Hon. J. C. Perkins was specially retained to watch over all the technicalities of law and carefully to exclude therefrom all flaws and informalities.

Thus have the definitions been re-written, the etymology enlarged, technical terms elucidated, synonymes (from the edition of 1859) re-arranged and interspersed throughout the text, the difference of pronunciation indicated in over 1300 words, secondary accents introduced, and numerous tables and pictorial illustrations added. The wood-cuts are both inserted in the body of the dictionary and classified in an appendix so as to exhibit at a glance all the different members of connected series.

An entirely new feature in this edition is the addition of *An Explanatory and Pronouncing Vocabulary of names of noted fictitious persons, places &c.*, by Mr. Wheeler—a complete work of reference in itself occupying over fifty pages and supplying a want often felt by the general reader. All the mythical personages of modern fictitious literature are here assembled and marshalled in alphabetical order.

If anything could have operated as a serious drawback against Webster's Dictionary and prevented so valuable a work obtaining the first place in popular estimation in England and British America, it has undoubtedly been its exceptional orthography, its superior excellence in other respects being almost unquestioned. This impediment has been effectually removed in the present edition by subjoining the old method of spelling in almost every instance in which Dr. Webster had departed from the established usage. No one therefore should now be without a copy of this, undoubtedly the most perfect dictionary of the English language extant; and to teachers especially we recommend it as an indispensable auxiliary.

BACKWOODSMAN.—The Crown and the Confederation. Three letters to the Hon. J. A. McDonald; By a Backwoodsman.—36 p. Lovell, Montreal, 1864.

HAMILTON.—Union of the colonies of British North America; By P. S. Hamilton, of Nova Scotia.—103 p. Lovell, Montreal, 1864.

MCGEE.—Notes on Federal Government, past and present; By the Hon. T. D. McGee. Dawson, Montreal, 1864.—pp. 76.

This and the two preceding pamphlets belong to that class of literary productions which attends upon every important change in the political constitution of a free people. In the last, Mr McGee imparts to the public the result of his historical researches into the subject of confederation. From the Achaian League to the Southern Confederacy no precedent has escaped his observation. We have a review of the Italian Republics of the middle ages, the Swiss Confederation, the Dutch Republic, the Germanic Confederation, the American Federal Union and the Confederation of New-Zealand. The author draws his conclusions in a moderate and guarded tone.

BRIÉ & GRIMAUD.—*Les poètes lauréats de l'Académie française. Recueil des poemes couronnés depuis* 1800 *avec une introduction* (1671-1800) *et des notices biographiques et littéraires,* vol. 2nd., 1830-1864; 18mo. Paris; 1864: 416 p. Bray.

LE ROY.—*Etude historique et critique sur l'enseignement élémentaire de la grammaire latine, par Alphonse Le Roy, professeur à l'Université de Liège et à l'école normale des humanités;* 8vo. Paris; 1864. 262 p. Daveluy.

This learned treatise first appeared in the Brussels *Revue de l'Instruction Publique.* It is eminently worthy of the attention of grammarians, and we heartily recommend it to teachers who may be in a

position to derive pleasure or profit from the perusal of one of the best works of the sort in the French language.

LANGEVIN.—*Cours de pédagogie ou principes d'éducation par Jean Langevin, prêtre, principal de l'école normale Laval.* Large 12mo, xv-408 p. Darveau, Quebec. Price Bound, $1.

The author has already published in pamphlet form a series of *Answers* to the questions forming part of the Teachers' Examination Papers on Agriculture and the Art of Teaching. In that little work, which obtained the approval of the Council of Public Instruction, the candidate's previous acquaintance with these branches was necessarily pre-supposed; its purpose, therefore, was merely to assist the memory, not to impart knowledge of a technical nature to the learner. The present treatise, the most important work of the kind which has issued from the Canadian press, is designed to accomplish this special purpose, and to supply a want long felt in the particular department of our public school system to which it is devoted. The matter is arrange under six distinct heads, viz: The Teacher, the Normal School, Education, Teaching, School Management, and the Teacher's Conduct; and an appendix is added in which will be found a concise history of the rise and progress of Education in Lower Canada.

A FEW REMARKS on the Meeting held at Montreal for the Formation of an Association for the promotion and protection of the Educational interest of Protestants in Lower Canada; 36 p. Senecal, Montreal; 1864.

OBSERVATIONS *sur l'assemblée tenue à Montréal pour former une Association dans le but de protéger les intérêts des protestants dans l'instruction publique;* 36 p. Senécal, Montreal; 1864.

These pamphlets which are reprinted from the *Journal of Education* and *Le Journal de l'Instructi n Publique*, may be had at all the Booksellers. Price 12 cts.

MONTHLY SUMMARY.

EDUCATIONAL INTELLIGENCE.

— The Minister of Public Instruction, says the *Bulletin*, having invited *l'Academie des Inscription et Belles-Lettres* to express an opinion as to the expediency of adopting the modern pronunciation in teaching the Greek language, that learned body has appointed a committee to examine the question. This committee is composed of the following members. Messrs. Brunet, de Presle, Dehèque and Alexander Rossignol M de Saulcy, President of the Board, M. Egger, Vice-President, and M Gignault, Secretary, will also take part in the deliberations.

LITERARY INTELLIGENCE.

— At the last meeting of the Literary Club on Monday evening, a paper was read by the Rev. Canon Leach, one of the Fellows of the Club, on the "Moral Influence of the Greek Drama." The Rev and learned gentleman's paper was characterized by that classic purity of taste, that high culture, and scholarly appreciation of his subject, which have given him a foremost place among the literary men of Canada. Notwithstanding the inclemency of the weather, there was an unusually numerous attendance of menbers, who listened with rapt attention to the paper. As illustrations of his appreciation of the works of the great dramatists, Dr Leach introduced several translations—some of them in verse, and marked by a high order of poetic ability. A vote of thanks, proposed by the Chairman, William Workman, Esq., was passed, amid hearty applause, at the close This paper with others read, will, we suppose, be published among the transactions of the Club.

The Club itself is progressing most satisfactorily. Its members continue steadily to increase. To its Library, have recently been added the journals of the Parliament of Lower Canada from its beginning to its end—a very precious work of reference to the historical student—and thanks to Mr McGee's generosity the Library walls are adorned with statuettes of the four great Italian poets. Altogether there is hope for Montreal that a good library of reference will be found here and a place of social resort established where our scholars and *litterateurs* may meet and establish an exchange of ideas, and spur each other to a deeper and more productive culture of our hitherto too barren literary soil.—*Montreal Gazette.*

NECROLOGICAL INTELLIGENCE.

— Chief Justice Taney died in Washington on Wesnesday night last, at the advanced age of 86 He was born in Maryland, where his ancestors, an old English Roman Catholic family, had settled in the beginning of the 17th century Admitted to the bar in 1799, he soon afterwards took an active part in public life. Delegate to the General Assembly in 1800, State senator in 1816, in 1831 he was appointed by President Jackson, Attorney General of the United States. Nominated by the President to the Secretaryship of the Treasury, he was opposed by the Senate, which was politically against him. In 1835 the same Senate opposed his appointment as an associate judge of the Supreme Court. On the death of Chief Justice Marshall, however, a senate of a different political complexion confirmed his nomination to the Chief-Justiceship. This was in January 1837, since which time until his death the nominee of General Jackson retained the elevated position to which he was then appointed. His career though an active one throughout, has been principally noted for his decision in the "Dred Scott" case. In that case he held that for more than a century previous to the adoption of the declaration of independence, negroes, whether slaves or free, had been regarded "as beings of an inferior order, and altogether unfit to associate with the white race either in social or political relations; and so inferior that they had no rights which the white man was bound to respect;" that consequently such persons were not included among the "people" in the general words of that instrument, and could not in any respect be considered as citizens; that the inhibition of slavery in the territories of the United States lying north of the line of 36° 30', known as the Missouri Compromise, was unconstitutional; and that Dred Scott, a negro slave, who was removed by his master from Missouri to Illinois, lost whatever freedom he might have thus acquired by being subsequently removed into the territory of Wisconsin, and by his return to the State of Missouri. Judge Taney had, for many years, been in a feeble state of health, though at no time unable to discharge his duties. He was, if we remember aright, the third Chief Justice of the United States, Judge Marshall being his immediate predecessor. Mr S. P. Chase, late Secretary to the Treasury of the United States, is Mr. Taney's successor.—*Journal of Education, U. C.*

—It is with regret that we are called upon to record the death of the Hon. Joseph E. Turcotte which occurred suddenly at Three Rivers on the 20th ultimo.

Mr. Turcotte was born at Gentilly and educated at the College of Nicolet. He had prepared himself for the Church, but soon abandonded theology for law. In his youth, he wrote and published several poetical essays which may be found in Mr. Huston's *Repertoire National*, except however *Le College de St. Anne*—one of the most admired productions of his pen. Mr. Turcotte took an active part, we understand, in the editing *Le Libéral;* and, of all the orators of the small revolutionary phalanx of Quebec in 1837, he was the most vehement. After the union of the Canadas, he successfully contested the county of St Maurice with Col. Gugy. Subsequently, Lord Metcalf made him Solicitor General although he did not at that time hold a seat in the House; but this office he resigned almost immediately, having lost his election. He did not re-enter Parliament until 1851, but had, ever since, taken a very active part in the politics of the country He was Speaker of the House of Assembly during the last Parliament and Mayor of Three Rivers at the time of the Prince of Wales' visit. To his activity and enterprising spirit the town of Three Rivers owes much of its present prosperity, the Radnor Forges, Arthabaska railway and proposed railway to the Piles being among the many undertakings he had originated or promoted. In Parliament, Mr. Turcotte had, at different times, represented the counties of St. Maurice, Maskinongé and Champlain and the town of Three Rivers. Besides the services rendered in the trusts previously alluded to, he had served the public in many capacities, having been Translator of Laws, Secretary to the first Seignorial Commission, Judge of Sessions at Three Rivers, and member of the second Seignorial Commission He died at the age of 56 years and leaves a widow and eight children.

—The Hon. Edward Everett died of apoplexy at his residence in Boston on the 15th January last. His age was about 71 years. A profound and universal feeling of sadness at the announcement of his demise pervaded all classes of our citizens. The nation loses in Edward Everett not merely a talented citizen, but one distinguished for patriotism, private virtues and liberal views on all that effects the welfare of man. Mr Everett has been successively a preacher of the Gospel, professor of a College, a member of Congress, a Governor of Massachusetts, Minister of England, President of Harvard University, Secretary of State and Senator from Masachusetts; each and all of these several positions he filled with credit to himself and constituents It is expected that high national honors will be paid to his memory.—*Scientific American.*

— Among the remarkable men who died during the year just ended, two, on whom we had intended to bestow a passing notice, had escape our pen We refer to the celebrated Irish agitator and orator, Smith O'Brien, and to the learned Professor Silliman. The latter, who died at the advanced age of 85 years, was the founder of the *American Journal of Science*, popularly known as *Silliman's Journal* and considered the best scientific periodical on the continent. It was first published in 1818. The account which Prof Silliman gave of his voyage fr n Hartford to Quebec in 1819, is one of the most interesting narratives of the kind which we have met with, and contrasts singularly with the arrogant tone often assumed by men of less note when describing their experiences in a colony.

EUSÈBE SENÉCAL, *Caloric Printing Presses*, 4, *St. Vincent Street, Montréal.*