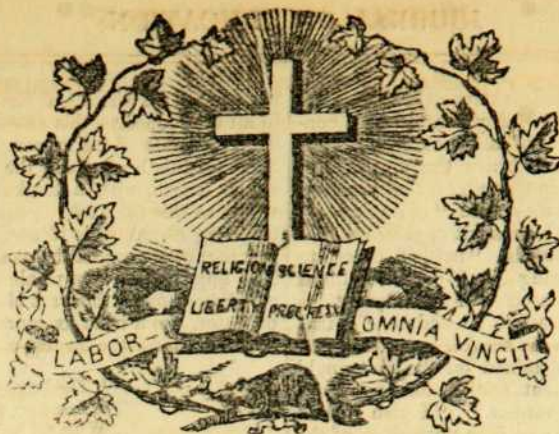




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SUMMARY.—Poetry: The Easter Daybreak, by Mrs. Ethelind Kittson.—**SCIENCE:** Leaves from Gosse's Romance of Natural History. (continued).—**EDUCATION:** The Educator and his Claims, by Dr. Wilkes.—Arithmetic, by John Bruce, Esq., Inspector of Schools. (continued).—Discouraging attempts to Sing.—The words we use.—**OFFICIAL NOTICES.**—Appointments: Education Office.—School Inspectors.—Examiners.—School Commissioners.—Trustees of Dissident Schools.—Erections of School Municipalities.—Diplomas granted by McGill Normal School.—Diplomas granted by Boards of Examiners.—**EDITORIAL:** Public Instruction in France.—Public distribution of prizes to the Evening classes of the Montreal Mechanic's Institute.—**NOTICES OF BOOKS AND PUBLICATIONS.**—Russell: Canada, its resources and defences.—Thoreau: Cape Cod.—March: Method of Philological study of the English language.—Hooker: Mineralogy and Geology.—Burton: The Culture of the Observing Faculties in the School and the Family.—Modern School Geography and Atlas.—Cameron: Lecture on British Columbia.—**MONTHLY SUMMARY:** Educational Intelligence.—Fine Arts.—Scientific Intelligence.—Miscellaneous Intelligence.—Necrological Intelligence.—Statistical Intelligence.

The ransomed earth rings out her Sabbath lay,
In joyous chimes to greet the Easter Day.
The Cherub Choir in Heaven's Cathedral sing
Their glorious welcome to the Easter King.

M. ETHELIND KITTSON.

(Gazette de Sorel.)

SCIENCE.

Leaves from Gosse's Romance of Natural History.

(Continued.)

MULTUM E PARVO.

Nor is Europe wholly free from such plagues. There is, in Servia and the Banat, a minute fly, from whose destructive assaults on the cattle the inhabitants have suffered immense losses. A traveller, arriving at Golubacs, on the Danube, thus speaks of it:—

"Near this place we found a range of caverns, famous for producing the poisonous fly, too well known in Servia and Hungary under the name of the Golubacser fly. These singular and venomous insects, somewhat resembling mosquitoes, generally make their appearance during the first great heat of the summer, in such numbers as to appear like vast volumes of smoke. Their attacks are always directed against every description of quadruped, and so potent is the poison they communicate, that even an ox is unable to withstand its influence, for he always expires in less than two hours. This results, not so much from the virulence of the poison, as that every vulnerable part is simultaneously covered with these most destructive insects; when the wretched animals, frenzied with pain, rush wild through the fields till death puts a period to their sufferings, or they accelerate dissolution by plunging headlong into the rivers."

Perhaps worse, however, than these, or any of them, are the mosquitoes; not that their virulence or fatality equals that of the tsetse or zimb, but because they are almost universally distributed. Those, terrible as they are, are limited to certain districts, but the mosquito is ubiquitous, and everywhere is a pest and a torment. One needs to spend a night among mosquitoes to understand what a true plague of flies is. Hundreds of travellers might be cited on the subject, and if I adduce the following testimony, it is not because it is the strongest I could find, but because it is one of the most recent, and therefore least known:—

That traveller of all travellers, Mr. Atkinson, who has laid open to us the most magnificent scenery of the world, and the most inaccessible, to whom neither the most fearful chasms and precipices, nor boiling torrents and swift rivers, nor earthquakes and furious storms,

LITERATURE.

POETRY.

THE EASTER DAYBREAK.

No echo wakes the earth's dim muffled sleep.
The pall of death hangs o'er the sombre deep.
The night's archangel folds her silvery wings,
As if withdrawn from slumber wearied things.
Unbroken cloud without one gush of white
Is gathered round the spirit of the light,
No odorous wind or wave crest floateth by
Beneath the "Passion" 's anguish darkened sky.
The lids of Heaven seal up the stars in gloom
And silence watcheth by the Saviour's tomb.
.....
A thrilling breath has stirred the languid air
Like the voice ripplings of far blended prayer,
A balmy fragrance on its murmur passed,
When glittering raiment on the ground was cast.
.....
The dazzling snow tints of the April cloud
Gleam o'er the radiance of a fallen shroud.
.....
The sister stars shine on the Orient skies.
The incense bearers of the dawn arise.
The wind's first murmur to the ear hath borne
The Alleluia of the Easter morn.
And echo wafts upon its hallowed breath
A psalm uplifted from the gates of death.
The earliest anthem of the flowing wave
A virgin triumph from the opened grave.
Then emblem of eternity bears now
The crown of light round his flame wreathing brow,

nor eternal frost and snow, nor burning waterless steppes, nor robbers, nor wild beasts, presented any impediment,—fairly confesses his conqueror in the musquito. The gnat alone, of all creatures, elicits from him a word of dread;—he could not brave the musquitoes. Over and over he tells us in his mountain scrambles, that the musquitoes were there “in millions,”—that they were “taking a most savage revenge on him for having sent his horses out of their reach,”—that they were “devouring” him,—that he “neither dared to sleep nor to look out;”—that “the humming sound of the millions was something awful;”—that he found himself “in the very regions of torment,” which “it was utterly impossible to endure;”—that “the poor horses stood with their heads in the smoke, as a protection against the pests;”—and that “to have remained on the spot would have subjected them to a degree of torment neither man nor beast could endure, so that they were obliged to retreat.” “I wish I could say,” he feelingly adds, “that we left the enemy in possession of the field. Not so; they pursued us with blood-thirsty pertinacity, until we reached some open meadows, when they were driven back into their fenny region by a breeze,—I hope to prey on each other.”

THE VAST.

Though great and small must always be comparative terms, the human mind does ordinarily set up some standard of dimensions, for this or that particular class of entities, and is affected with emotions of surprise and admiration, in proportion as some examples either exceed or fall short of it. In living creatures, probably, the human body is the tacitly recognised medium of size; for we call a horse or a buffalo a large animal, a cat or a weasel a small one; while, in such as pass beyond these limits in either direction, we are conscious that the dimension becomes a prominent element in the interest with which we regard them. The first exclamation of one who sees an elephant for the first time, would probably be, “How big he is!” and in like manner the first impression produced by a humming-bird, in most cases, would not be “How beautiful! How glittering!” but “How very small!”

I well remember the interest and almost awe with which, on my first voyage across the Atlantic, I saw suddenly emerge from the sea, the immense black oily back of a whale. It was almost close to the ship, and it rose like a great smooth bank out of the water, gave a sort of wallowing roll, and quietly sank from sight again. The excitement of the momentary sight prevented my attempting to estimate its measurement, besides that the entire animal was not exposed, but it seemed to me nearly as large as the vessel in which I sailed. The species was no doubt the great rorqual, since the whalebone whale is said never to venture beyond the limits of the Arctic Seas. This is the most enormous of all the animals known to inhabit this globe, attaining a length of a hundred feet and even more. The skeleton of one which was stranded near Ostend in 1827, which was subsequently exhibited in Paris and London, measured ninety-five feet. Two specimens have been measured of the length of a hundred and five feet, and Sir Arthur de Capel Brooke asserts that it is occasionally seen of the enormous dimensions of one hundred and twenty feet. (1)

The “right” or whalebone whale, the object of commercial enterprise in the Polar Seas, is little more than half as large as this last-named bulk. Eighty and a hundred feet are mentioned, indeed, by the earlier writers, as occasional dimensions of this species, but these statements are possibly exaggerations, or else the distinction between this and the rorqual may have been overlooked. A tradition exists of one Ochter, a Norwegian, of King Alfred’s day, who “was one of six that had killed sixty whales in two days, of which some were forty-eight, some fifty yards long.” The discrimination here would seem to imply actual measurement, though perhaps it was not very precise. At present, nothing like such a length is attained. The late Dr. Scoresby, who was personally engaged in the capture of three hundred and twenty-two whales, never found one of this species that exceeded sixty feet. There is, however, one caveat needful to be remembered; that an animal naturally long-lived, and which probably grows throughout life, is not likely to attain anything like its full dimensions when incessantly persecuted as the whale of the Arctic Seas has been for ages past. However, a whale of sixty feet is estimated to weigh seventy tons, or more than three hundred fat oxen.

The sperm-whale or cachalot, whose home is the vast Pacific, from north to south and from east to west, holds a place as to bulk between

the whalebone whale and the rorqual. Mr. Beale, who is the authority in all that concerns this animal, gives eighty-four feet as the length of a sperm-whale of the largest size, and its diameter twelve or fourteen feet. Of this huge mass, the head occupies about one third of the entire length, with a thickness little inferior to that of the body; while, as this thickness is equal throughout, the front of the head terminating abruptly, as if an immense solid block had been sawn off, this part of the animal bears no small resemblance to an immense box. The appearance of a whale when disturbed, and going what seamen call “head-out,” this vast bluff head projected every few seconds out of water, has a most extraordinary appearance.

Undoubtedly the largest of terrestrial animals is the elephant,

“The huge earth-shaking beast;
The beast on whom the castle
With all its guards doth stand;
The beast that hath between his eyes
The serpent for a hand.”

But the specimens with which we are familiar in our zoological gardens and menageries, are inadequate representatives of the race. It is in their native regions, of course, that we look for the most magnificent specimens. Some exaggeration, however, has prevailed respecting the dimensions attainable by the elephant. “Seventeen to twenty feet” have been given as its occasional height in the Madras presidency. The Emperor Baber, in his Memoirs, alludes to the report that in the islands the elephants attain ten *gez*, or about twenty feet; but he adds, “I have never seen one above four or five *gez*,” (eight or ten feet.) The East India Company’s standard was seven feet and upwards, measured at the shoulder. Mr. Corse says the greatest height ever measured by him was ten feet six inches. As an example of the deceptiveness of a mere conjecture even by experienced persons, he mentions the case of an elephant belonging to the Nabob of Decca, which was said to be fourteen feet high. Mr. Corse wished to measure particularly, as he himself judged him to be twelve feet. The driver assured him that the beast was from fifteen to eighteen feet;—yet when carefully measured, he did not exceed ten feet. The Ceylon specimens rarely exceed nine feet; yet Wolf says, he saw one taken near Jaffna, which measured twelve feet one inch, of course to the arch of the back.

The elephants of the farther peninsula much excel those of India and Ceylon, perhaps because they are less disturbed. The skeleton of one in the museum at St. Petersburg, which was sent to Peter the Great by the Shah of Persia, measures sixteen feet and a half in height; and probably this is the highest authentic instance on record.

The African elephant is perhaps not inferior to that of Pegu. Mr. Pringle, in a very graphic picture, has described an unexpected rencontre with an enormous elephant in an African valley. “We halted, and surveyed him for a few minutes in silent admiration and astonishment. He was, indeed, a mighty and magnificent creature. The two engineer officers, who were familiar with the appearance of the elephant in his wild state, agreed that the animal before us was at least fourteen feet in height.” Major Denham in his expedition into Central Africa, met with some which he guessed to be sixteen feet high; but one which he saw killed, and which he characterises as “an immense fellow,” measured twelve feet six to the back. (1) Fossil remains of an elephant have been discovered at Jubbulpore, which measure fifteen feet to the shoulder.

I need only advert to other colossal quadrupeds, the seven or eight species of rhinoceros, the hippopotamus, the giraffe, the camel, the gaur, the gayal, and other great wild oxen of India; the urus, the bison, the Cape buffalo, the eland. Most of these dwell in the poor and arid regions of South Africa; where the nakedness of the country permits them to be seen to advantage. Dr. Andrew Smith, in one day’s march with the bullock-waggons saw, without wandering to any great distance on either side, between one hundred and one hundred and fifty rhinoceroses, which belonged to three species; the same day he saw several herds of giraffes, amounting together to nearly a hundred; and, though no elephants were observed, yet they are found in this district. At the distance of little more than an hour’s march from their place of encampment on the previous night, his party actually killed at one spot eight hippopotamuses, and saw many more. In this same river there were likewise crocodiles.

Among birds, the condor of the Andes has been the subject of greatly exaggerated reports of its dimensions. When it was first discovered by the Spanish conquerors of America, it was compared to the Rokh of Arabian fable, and by some even considered to be the

(1) The gigantic whales that inhabit the Indian Ocean are probably of this genus. One was stranded on the Chittagong coast in August 1842, which measured ninety feet in length and forty-two in diameter; and another on the coast of Aracan in 1851, which was eighty-four feet long. (See *Zoologist* for December 1859, p. 6778.)

(2) Sir E. Tennent, (*Ceylon*, ii., p. 291.) quoting this account, says “nine feet six inches;” but this is a mis-reading. It was nine feet six inches to the *hip-bone*; and three feet more to the back.

identical bird, "which is able to truss an elephant." Garcilasso states that some of those killed by the Spaniards measured fifteen or sixteen feet (the vagueness of the "or" in what professes to be actual measurement is suspicious) from tip to tip of the extended wings. He adds that two will attack a bull and devour it, and that single individuals will slay boys of twelve years old.

Desmarchais improves upon this; stretches the expansion of the wings to eighteen feet; a width so enormous that, as he says, the bird can never enter the forest; and he declares that a single one will attack a man, and carry off a stag.

A modern traveller, however, soars far beyond these puny flights of imagination, and gravely gives forty feet as the measurement, carefully noted, as he informs us, "with his own hand," from the actual specimen. It is only charitable to conclude that he really measured sixteen feet, and that he either wrote "spaces" by mistake, or, which is most likely, wrote simply "16," translating it afterwards when he compared his notes with what others had said before him. Here, however, is the veracious description, which the reader will see does not lack romance in its embellishment.

"It was so satiated with its repast on the carcass of a horse, as to suffer me to approach within pistol-shot before it extended its enormous wings to take flight, which was to me the signal to fire; and having loaded with an ample charge of pellets, my aim proved effectual and fatal. What a formidable monster did I behold, screaming and flapping in the last convulsive struggle of life! It may be difficult to believe that the most gigantic animal which inhabits the earth or the ocean, can be equalled in size by a tenant of the air; and those persons who have never seen a larger bird than our mountain eagle, will probably read with astonishment of a species of that same bird, in the southern hemisphere, being so large and strong as to seize an ox with its talons, and to lift it into the air, whence it lets it fall to the ground, in order to kill it and prey upon the carcass. But this astonishment must, in a great measure, subside when the dimensions of the bird are taken into consideration, and which, incredible as they may appear, I now insert from a note taken by my own hand. When the wings are spread they measure sixteen spaces, forty feet in extent from point to point. The feathers are eight spaces, twenty feet in length, and the quill part, two palms, eight feet in circumference. It is said to have strength enough to carry off a living rhinoceros."

Humboldt dissipated these extravagances; though he confesses that it appeared to himself of colossal size, and it was only the actual admeasurement of a dead specimen that corrected the optical illusion. He met with no example that exceeded nine feet, and he was assured by many of the inhabitants of Quito that they had never shot any that exceeded eleven. This estimate, however, appears to be below the reality; for Tschudi, a most careful and reliable authority, and an accomplished zoologist, assigns to this bird in one place an expanse of "from twelve to thirteen feet," while in another he says: "I measured a very large male condor, and the width from the tip of one wing to the tip of the other was fourteen English feet and two inches, an enormous expanse of wing, not equalled by any other bird except the white albatross." So far from his "trussing a rhinoceros," or even an ox, he cannot, according to Tschudi, raise even a sheep from the ground. "He cannot, when flying, carry a weight exceeding eight or ten pounds." The voracity of the obscene bird is very great. The owner of some captive specimens assured the naturalist that he had given to one, in the course of a single day, by way of experiment eighteen pounds of meat, consisting of the entrails of oxen; that the bird devoured the whole, and ate his allowance the next day with the usual appetite.

We have all been accustomed from childhood to regard with awe the enormous serpents of the hot damp intertropical forests; though the specimens carried about in travelling menageries have but little contributed to nurture the sentiment. A couple of coils of variegated mosaic, looking like a tessellated pavement, about as thick as a lacquey's calf, wrapped up in the folds of a blanket at the bottom of a deal box, we had difficulty in accepting as the impersonation of the demon which hung from the branches of an Indian tree, and, having pressed the life out of a buffalo in his mighty folds and broken his bones, swallowed the body entire, all but the horns. Here again there is incertitude and disappointment; and the colossal dragon, which looms so large in the distance of time and space, grows "small by degrees and beautifully less" in the ratio of its approach to our own times and our own eyes. Yet enough of size and power remains, even when all legitimate deductions are made, to invest the great boa with a romantic interest, and to make the inquiry into its real dimensions worthy of prosecution.

I may observe, that several species of these great serpents exist in the intertropical regions of America, Africa, and Asia; but all these, though assigned by zoologists to distinct genera (the American species belonging to the genus *Boa*, and those of Africa and Asia to *Python*)

have so much in common, in habits, structure, and size, that I shall speak of them without distinguishing the species.

The old Roman historians report that the army of Attilius Regulus, while attacking Carthage, was assaulted by an enormous serpent, which was destroyed only by the aid of the military engines crushing it with huge stones. The skin of this monster, measuring 120 feet in length, was sent to Rome, and preserved as a trophy in a temple till the Numantine war. Several writers mention the fact, and Pliny speaks of its existence as well known.

Diodorus Siculus mentions a serpent which was captured, not without loss of human life, in Egypt, and which was taken to Alexandria; it measured thirty cubits, or about forty-five feet in length.

Suetonius records that one was exhibited in front of the Comitium at Rome, which was fifty cubits, or seventy-five feet in length.

It is probable that these measurements were all taken from the skin after having been detached from the body. I have had some experience in skinning serpents, and am therefore aware of the extent to which the skin, when dragged off by force, is capable of stretching: one-fourth of the entire length may not unfairly be deducted on this account. But even with this allowance, we must admit, unless we reject the testimony of sober historians, who could hardly have been mistaken so grossly as to warrant such rejection, that serpents did exist in ancient times which far exceeded the limits that have fallen under the observation of modern naturalists.

There is a well-known picture by Daniell, representing an enormous serpent attacking a boat's crew in one of the creeks of the Ganges. It is a graphic scene, said to have been commemorative of a fact. The crew had moored their boat by the edge of the jungle, and, leaving one of the party in charge, had gone into the forest. He lay down under the thwarts, and was soon asleep. During his unconsciousness an enormous python emerged from the jungle, coiled itself round the sleeper, and was in the act of crushing him to death, when his comrades returned. They succeeded in killing the monster, "which was found to measure sixty-two feet and some inches in length." This seems precise enough; but we should like to know whether the measurement was made by the Lascars themselves, or by any trustworthy European.

A correspondent of the *Edinburgh Literary Gazette* has told, with every appearance of life-truth, a thrilling story of an encounter which he had with an enormous boa on the banks of a river in Guiana. Awakened, as he lay in his boat, by the cold touch of something at his feet, he found that the serpent's mouth was in contact with them, preparing, as he presumed, to swallow him feet foremost. In an instant he drew himself up, and, grasping his gun, discharged it full at the reptile's head, which reared into the air with a horrid hiss and terrible contortions, and then, with one stroke of his paddles, he shot up the stream beyond reach. On arriving at his friend's house, it was determined to seek the wounded serpent, and several armed negroes were added to the party.

They soon found the spot where the crushed and bloody reeds told of the recent adventure, and proceeded cautiously to reconnoitre. Advancing thus about thirty yards, alarm was given that the monster was visible. "We saw through the reeds part of its body coiled up, and part stretched out; but, from their density, the head was invisible. Disturbed, and apparently irritated, by our approach, it appeared, from its movements, about to attack us. Just as we caught a glimpse at its head we fired, both of us almost at the same moment. It fell, hissing and rolling in a variety of contortions." Here one of the negroes, taking a circuit, succeeded in hitting the creature a violent blow with a club, which stunned it, and a few more strokes decided the victory. "On measuring it, we found it to be nearly forty feet in length, and of proportional thickness."

I do not know how far this story is to be relied on; but if it is given in good faith, the serpent was the longest dependable example I know of in modern times. Still, "nearly forty feet" is somewhat indefinite.

In Mr. Ellis's amusing account of his visit to Manila, he mentions specimens of enormous size; but there does not seem to have been any actual admeasurement.

"On one occasion," he says, "I was driven by an Indian, (coachman to the gentleman with whom I was stopping,) in company with a friend, to the house of a priest, who had some singularly large specimens of the boa-constrictor (*python*); one, of two that were in a wooden pen together, could hardly have been less than fifty feet long, and the stoutest part as thick round as a very fat man's body."

Bontius speaks of some which were upwards of thirty-six feet long; doubtless Oriental pythons. An American *boa* is mentioned by Binzley, of the same length, the skin of which was in the cabinet of the Prince of Orange; and Shaw mentions a skin in the British Museum which measured thirty-five feet. Probably in these last two cases we must allow something for stretching.

In the *Embay Courier*, of August 31, 1799, a dreadful story is nar-

rated of a Malay sailor having been crushed to death by a python on the coast of Celebes. His comrades, hearing his shrieks, went to his assistance, but only in time to save the corpse from his living grave. They, however, killed the serpent. It had seized the poor man by the wrist, where the marks of the teeth were very distinct, and the body shewed evident signs of having been crushed by coils round the head, neck, breast, and thigh. The length of the monster was "about thirty feet, and its thickness that of a moderate-sized man."

Mr. M'Leod, in the *Voyage of H. M. S. Alceste*, has minutely described the feeding of a python from Borneo, which was sixteen feet long, and observes that, at Whydah, in Africa, he had seen serpents "more than double the size" of this specimen; but it does not seem that they were measured.

The *Penang Gazette* of a late date says—"A monster boa-constrictor (*python*) was killed one morning this week by the overseer of convicts at Bayam Lepas, on the road to Telo' Kumbar. His attention was attracted by the squealing of a pig, and on going to the place he found it in the coils of the snake. A few blows from the changkolf of the convicts served to despatch the reptile, and, on uncoiling him, he was found to be twenty-eight feet in length, and thirty-two inches in girth. This is one of the largest specimens we have heard of in Penang."

Dr. Andrew Smith, in his *Zoology of South Africa*, records having seen a specimen of *Python Natalensis*, which was twenty-five feet long, though a portion of the tail was wanting. This is the largest specimen I know of, actually measured in the flesh by a perfectly reliable authority; and even here the amount to be added to the twenty-five feet can only be conjectured.

It may be interesting to compare these statements by setting them in a tabular form, indicating each specimen by some name that shall serve to identify it, and adding a note of the degree of credit due to each.

	Feet	
Regulus.....	120	probably stretched.
Suetonius.....	75	ibid.
Diodorus.....	45	ibid.
Daniell.....	62	not reliable.
Ellis.....	50	conjectural.
Guiana.....	40	anonymous.
Bontius.....	36	reliable.
Bingley.....	36	perhaps stretched.
Shaw.....	35	ibid.
M'Leod.....	32	conjectural.
Celebes.....	30	vague.
Penang.....	28	perhaps reliable.
Smith.....	25	certainly correct.

Turning from the animal to the vegetable world, we find giants and colossi there which excite our wonder. There is a sea-weed, the *Nereocystis*, which grows on the north-west shores of America, which has a stem no thicker than whipcord, but upwards of three hundred feet in length, bearing at its free extremity a huge hollow bladder, shaped like a barrel, six or seven feet long, and crowned with a tuft of more than fifty forked leaves, each from thirty to forty feet in length. The vesicle, being filled with air, buoys up this immense frond, which lies stretched along the surface of the sea: here the sea-otter has his favourite lair, resting himself upon the vesicle, or hiding among the leaves, while he pursues his fishing. The cord-like stem which anchors this floating tree must be of considerable strength; and, accordingly, we find it used as a fishing-line by the natives of the coast. But great as is the length of this sea-weed, it is exceeded by the *Macrocytis*, though the leaves and air-vessels of that plant are of small dimensions. In the *Nereocystis*, the stem is unbranched; in *Macrocytis*, it branches as it approaches the surface, and afterwards divides by repeated forkings, each division bearing a leaf, until there results a floating mass of foliage, some hundreds of square yards in superficial extent. It is said that the stem of this plant is sometimes fifteen hundred feet in length.

Mr. Darwin, speaking of this colossal alga at the southern extremity of America, where it grows up from a depth of forty-five fathoms to the surface, at a very oblique angle, says, that its beds, even when of no great breadth, make excellent natural floating breakwaters. It is quite curious to mark how soon the great waves from the ocean, in passing through the straggling stems into an exposed harbour, sink in elevation, and become smooth.

Such an enormous length is not without parallel in terrestrial plants. Familiar to every one,—from the schoolboy, over whom it hangs in terror, upward,—as is the common cane, with its slenderness, its flexibility, and its flinty, polished surface,—how few are aware that it is only a small part of the stem of a palm-tree, which, in its native forest, reached a length of five hundred feet! These ratans form a tribe of plants growing in the dense jungles of continental and insular India, which, though they resemble grasses or reeds in their appearance,

are true trees of the palm kind. They are exceedingly slender, never increasing in thickness, though immensely in length; in the forest they trail along the ground, sending forth leaves at intervals, whose sheathing bases we may easily recognise at what we call joints, climb to the summits of trees, descend to the earth, climb and descend again, till some species attain the astonishing length of twelve hundred feet.

We are accustomed to consider the various species of *Cactus* as potted plants for our green-house shelves and cottage-windows; yet, in our larger conservatories, there are specimens which astonish us by their size. A few years ago there were at the Royal Gardens at Kew, two examples of *Echinocactus*, like water-butts for bulk; one of which weighed upwards of seven hundred pounds, and the other about two thousand pounds.

The species of *Cereus* which with us appear as green, succulent, angular stems, and bear their elegant, scarlet blossoms, adorned with a bundle of white stamens, grow, in the arid plains of South America, to thick lofty pillars or massive branching candelabra. Travellers in Cumana have spoken with enthusiasm of the grandeur of these rows of columns, when the red glow of sunset illumines them, and casts their lengthening shadows across the plain.

A kindred species in the Rocky Mountains of the northern continent has been thus described by a recent traveller:—

"This day we saw, for the first time, the giant cactus (*Cereus giganteus*); specimens of which stood at first rather widely apart, like straight pillars ranged along the sides of the valley, but, afterwards, more closely together, and in a different form—namely, that of gigantic candelabra, of six-and-thirty feet high, which had taken root among stones and in clefts of the rocks, and rose in solitary state at various points.

"This *Cereus giganteus*, the queen of the cactus tribe, is known in California and New Mexico under the name of Petahaya. The missionaries who visited the country between the Colorado and the Gila, more than a hundred years ago, speak of the fruit of the Petahaya, and of the natives of the country using it for food; and they also mention a remarkable tree that had branches, but no leaves, though it reached the height of sixty feet, and was of considerable girth. . . . The wildest and most inhospitable regions appear to be the peculiar home of this plant, and its fleshy shoots will strike root, and grow to a surprising size, in chasms in heaps of stones, where the closest examination can scarcely discover a particle of vegetable soil. Its form is various, and mostly dependent on its age; the first shape it assumes is that of an immense club standing upright in the ground, and of double the circumference of the lower part at the top. This form is very striking, while the plant is still only from two to six feet high, but, as it grows taller, the thickness becomes more equal, and when it attains the height of twenty-five feet, it looks like a regular pillar; after this it begins to throw out its branches. These come out at first in a globular shape, but turn upward as they elongate, and then grow parallel to the trunk, and at a certain distance from it, so that a *cereus* with many branches looks exactly like an immense candelabrum, especially as the branches are mostly symmetrically arranged round the trunk, of which the diameter is not usually more than a foot and a half, or, in some rare instances, a foot more. They vary much in height; the highest we ever saw, at Williams' Fork, measured from thirty-six to forty feet; but, south of the Gila, they are said to reach sixty; and when you see them rising from the extreme point of a rock, where a surface of a few inches square forms their sole support, you cannot help wondering that the first storm does not tear them from their airy elevation. . . .

"If the smaller specimens of the *Cereus giganteus* that we had seen in the morning excited our astonishment, the feeling was greatly augmented, when, on our further journey, we beheld this stately plant in all its magnificence. The absence of every other vegetation enabled us to distinguish these cactus-columns from a great distance, as they stood symmetrically arranged on the heights and declivities of the mountains, to which they imparted a most peculiar aspect, though certainly not a beautiful one. Wonderful as each plant is, when regarded singly, as a grand specimen of vegetable life, these solemn, silent forms, which stand motionless, even in a hurricane, give a somewhat dreary character to the landscape. Some look like petrified giants, stretching out their arms in speechless pain, and others stand like lonely sentinels, keeping their dreary watch on the edge of precipices, and gazing into the abyss, or over into the pleasant valley of the Williams' Fork, at the flocks of birds that do not venture to rest on the thorny arms of the Petahaya; though the wasp and the gaily variegated woodpecker may be seen taking up their abode in the old wounds and scars of sickly or damaged specimens of this singular plant."

In the island of Teneriffe there still exists a tree which is an object of scientific curiosity to every visitor, the Dragon-tree of Orotava. It

has been celebrated from the discovery of the island, and even earlier, for it had been venerated by the Guanches as a sacred tree from immemorial time. Its height is about seventy feet, but its bulk is far more extraordinary. Le Dru found the circumference of the trunk, near the ground, to be seventy-nine feet. Humboldt, who, when he ascended the Peak in 1799, measured it some feet from the ground, found it forty-eight feet; and Sir G. Staunton gives thirty-six feet as the circumference at a height of ten feet.

The banyan, or sacred fig of India, acquires a prodigious size, not by the enlargement of its individual trunk, but by the multiplication of its trunks, in a peculiar manner of growth. As its horizontal limbs spread on all sides, shoots descend from them to the earth, in which they root, and become so many secondary stems, extending their own lateral branches, which in turn send down fresh rooting shoots, thus ever widening the area of this wondrous forest, composed of a single organic life. This is the tree which Milton makes afford to our guilty first parents the "fig-leaves" with which they hoped to clothe their new-found nakedness.

"So counsel'd he, and both together went
Into the thickest wood; there soon they chose
The fig-tree; not that kind for fruit renown'd;
But such as at this day, to Indians known
In Malabar or Decan, spreads her arms,
Branching so broad and long, that in the ground
The bended twigs take root, and daughters grow
About the mother-tree, a pillar'd shade
High overach'd, and echoing walks between:
There oft the Indian herdsman shunning heat,
Shelters in cool, and tends his pasturing herds
At loopholes cut through thickest shade: those leaves
They gather'd, broad as Amazonian targe;
And, with what skill they had, together sew'd,
To gird their waist." (1)

Banyans exist which are much older than the Christian era. Dr. Roxburgh mentions some whose area is more than fifteen hundred feet in circumference, and one hundred in height, the principal trunk being twenty or thirty feet to the horizontal boughs, and eight or nine feet in diameter. But the most celebrated tree of this kind is one growing on the banks of the Nerbudda, and covering an almost incredible area, of which the circumference still existing is nearly two thousand feet, though a considerable portion has been swept away by the floods of the river. The overhanging branches which have not (or had not at the time this description was made) yet thrown down their perpendicular shoots, cover a far wider space. Three hundred and twenty main trunks may be counted, while the smaller ones exceed three thousand; and each of these is constantly sending forth its branches and pendent root-shoots to form other trunks, and become the augmenters of the vast colony. Immense popular assemblies are sometimes convened beneath this patriarchal fig, and it has been known to shelter seven thousand men at one time beneath its ample shadow. (2)

The Baobab, a tree of tropical Africa, but now naturalised in other hot countries, is one which attains an immense bulk. Its growth is chiefly in the trunk. It is by no means uncommon for a bole of seventy-five or eighty feet in circumference to begin to send out its branches at twelve or fifteen feet from the ground; and the entire height is frequently little more than the circumference of the trunk. The lower branches, at first horizontal, attain a great length, and finally droop to the ground, completely hiding the trunk, and giving to the tree the appearance of a vast hillock of foliage.

Some examples of the dimensions of this immense, but soft-wooded and spongy tree, may be adduced. Adanson, in 1748, saw, at the mouth of the Senegal, baobabs which were from twenty-six to twenty-nine feet in diameter, with a height of little more than seventy feet, and a head of foliage a hundred and eighty feet across. He remarks, however, that other travellers had found specimens considerably larger. Peters measured trunks from twenty to twenty-five feet thick, which he says were the largest he saw. Perrottet, in his *Flora of Senegambia*, declares that he had seen some thirty-two feet in diameter, and seventy to eighty feet high. Golberry found specimens attaining thirty-six feet in diameter, yet but sixty-four feet in height. And Aloysius Cadamosto, who was the first to describe the tree, found specimens whose circumference he estimated at seventeen fathoms, which would give a diameter of thirty-four feet.

A kind of cypress, growing in Oaxaca, in Mexico, has attained great celebrity among botanists, De Candolle having stated its diame-

ter at sixty feet. Humboldt, who speaks from personal examination, an advantage which the great botanist did not possess, reduces it to forty feet six inches—a very enormous bulk, however, still.

A recent traveller in Venezuela, thus notices a tree of remarkable dimensions:—

"Soon after leaving Turmero, we caught sight of the far-famed Zamang del Guayre, and in about an hour's time arrived at the hamlet of El Guayre, from whence it takes its name. It is supposed to be the oldest tree in the world, for so great was the reverence of the Indians for it on account of its age at the time of the Spanish Conquest, that the Government issued a decree for its protection from all injury, and it has ever since been public property. It shows no sign whatever of decay, but is as fresh and green as it was most probably a thousand years ago. The trunk of this magnificent tree is only sixty feet high, by thirty feet in circumference, so that it is not so much the enormous size of the Zamang del Guayre that constitutes its great attraction, as the wonderful spread of its magnificent branches, and the perfect dome-like shape of its head, which is so exact and regular that one could almost fancy some extinct race of giants had been exercising their topiarian art upon it. The circumference of this dome is said to be nearly six hundred feet, and the measure [arch?] of its semicircular head very nearly as great. The zamang is a species of mimosa, and what is curious and adds greatly to its beauty and softness is, that the leaves of this giant of nature are as small and delicate as those of the silver-willow, and are equally as sensitive to every passing breeze."

Even in temperate climates, among the trees with which we are familiar, vast dimensions are not unknown. A yew in the churchyard of Grasford, North Wales, measures more than fifty feet in girth below the branches. In Lithuania, lime-trees have been measured of the circumference of eighty-seven feet. And, near Saintes, in France, there is an oak, which is sixty-four feet in height, and measures nearly thirty feet in diameter close to the ground, and twenty-three feet at five feet high. A little room, twelve feet nine inches in width, has been made in the hollow of the trunk, and a semicircular bench within it has been carved out of the living wood. A window gives light to the interior, and a door closes it, while elegant ferns and lichens serve for hangings to the walls.

But let us look at examples in which prodigious height and immense bulk are united. The *Macrocytis* and the ratan are enormously lengthened, but they are slender; the baobab and the cypress are very thick, but they are short. The colossal locust-trees of equinoctial America are pre-eminent for vastness in both aspects. Von Martius has depicted a scene in a Brazilian forest, where some trees of this kind occurred of such enormous dimensions, that fifteen Indians with outstretched arms could only just embrace one of them. At the bottom they were eighty-four feet in circumference, and sixty feet where the boles became cylindrical. "They looked more like living rocks than trees; for it was only on the pinnacle of their bare and naked bark that foliage could be discovered, and that at such a distance from the eye that the forms of the leaves could not be made out.

(To be continued.)

EDUCATION

The Educator and his Claims.

(A lecture delivered before the Teachers' Association in connection with the McGill Normal School, by Dr. Wilkes.)

I use the term "Educator rather than Teacher," for the reason that those truly faithful ones of both sexes, to whose influence parents commit their children for several hours a day, during a period of from seven to ten years are more than teachers. They do far more than convey instruction—they greatly affect the future character. One sees *e. g.* in the pupils of such an one as the late Dr. Arnold of Rugby the moulding force exercised on the principles and character. Not only is the intellect trained in such cases, but the conscience also and the heart—large and broad views are awakened, and noble principles are implanted. Such education is more than teaching, hence we denominate its priest the educator.

Yet are there other educators besides the class represented in this Association. The pulpit educates and so does the press. The former, prior to the inauguration of the latter, was wont to be the principal source of instruction as well as of religious awakening to the people; and still it exercises a vast power in moulding the national intellect,

(1) *Paradise Lost*, book IX.

(2) *Forbes' Oriental Memoirs*.

conscience and heart. The press in our day has become a many-voiced schoolmaster, ever sending its lessons into the homes of the people; often doing great good, and alas! not infrequently doing much mischief. It undoubtedly exercises a mighty and increasing influence in the training of the community.

But the educator with whom we have now to do has a somewhat different sphere. After the child's mother, he begins at the beginning. Ere the pulpit or the press can do much for the pupil his work is well-nigh completed. Hence it would be difficult to exaggerate the importance of the trust committed to him. He has to lead forth and guide the mental powers in their budding and opening processes and to furnish them with pabulum on which they may feed and grow; he has to devote the conscience into a watchful and healthy activity: he has to check, in their beginnings, all deceit, meanness, and impurity: he has to cultivate habits of industry, faithful work, truthfulness and sincerity;—he has some times to awaken and always to cherish sentiments of honour and uprightness in dealing with fellows; in fine he has to work wisely and well at the foundations of personal character. Who of us would venture to estimate the momentous interests involved in a work such as this? In the personal character of a generation of youth lies embedded the social condition of the world's people during the next age. Whether the coming generation, soon to occupy the vast arena, shall be virtuous or vicious, shall be refined and cultivated or rough and barbarous, shall be good or bad, depends largely on what is done with children at school. It is but a truism to say that men and women make the nation, and it is not much more to say that the children and youth of the present are to be the men and women of the early future, and that such future depends for its character on what our schools do in the present. In such estimate it is supposed that parental co-operation forms part of the educating power in exercise.

It is obvious that a nation's prosperity is involved in this question. The greatest difficulties with which constitutional governments have to contend, and the cause of their failure, where they do fail, is the want of high character in the people. Whenever self is more precious than principle, and electors or elected think more of personal interests than of the national welfare, corruption rolls in like a flood, the national conscience is debauched, and vice stalks forth unblushingly flaunting its villainy in the face of day. The true conservators of a nation's well-being are the faithful, conscientious and large hearted educators of its children and youth, for they work at the foundations and cast in the salt at the spring head.

And if the interests at stake in this matter are so momentous in the present life, what must be their magnitude when eternity is brought into view. Immortality invests the whole subject with ineffable grandeur; for these pupils will live for ever. The training of the present mightily affects that future, whether it shall be one of honour or disgrace, happiness or misery, life or death.

We may not dismiss from our present consideration the work of the educator without noting certain qualifications that seem to be more or less needful to success in this work. I do not dilate on the obvious qualification of accurate knowledge on such departments as the teacher undertakes to cultivate, for the reason that every one must at once perceive the need of this. The masculine form of the pronoun must also be understood throughout as including the feminine, for much of an effective education is conducted by women. Among the qualifications of an educator may be placed:

1st. *A true estimate of its nature and importance.*—We cannot surely expect any one to succeed in a profession like this, whose sole object is the making of money or even the obtaining of a livelihood. It is to be feared that it is not infrequently taken up as a last resort, other means of obtaining bread failing. Now, just as one would not look for great good from one who sought "the priest's office in Israel for a piece of silver or a morsel of bread," so in this case, it would be indeed surprising should mere mercenary motives achieve any worthy ends in the work of education. It is not meant to deny proper reference to such considerations in all our plans. On the contrary it is a most legitimate and honourable way of not only obtaining a livelihood, but also of laying up a competency. The labourer is worthy of his hire: and no labourer is more worthy than the educator. We delight to see them erecting their own establishments,—owning them, and becoming wealthy as far as is compatible with the claims of a large hearted benevolence.

But we object to this as *the governing motive*. That should spring out of a true estimate of the nature and importance of their work. Every young mind and heart enshrined in those bodies which occupy the seats in their establishment, is there for development and culture. No one but God can foresee the future of the being whose loving, or yearning, or merry eyes look out upon you: but you have it directly in your power to mould that future. No two boys or girls are alike. Some are sufficiently similar to admit of classification so as to afford

opportunity to generalize the training process, but there will always be *differentia* to require special attention. It would be out of place to enlarge upon or to illustrate these points; their mention is all that is now appropriate. He, however, who appreciates the nature and importance of his work will study so as to know the general character and specialities of every child under his care and will conscientiously adapt his measures to each case. It is matter for gratulation that the old-fashioned *birch* or *taws* for every delinquent, without regard to characteristics of the pupil or the circumstances of his delinquency, has gone out, and is among the things that were; but discipline and punishment may not safely go out, only they must be adapted to each case needing them. A true estimate of the work to be done and of its vast importance, will awaken much thought and inquiry and will elevate at all points the character of the labourer.

2nd. *Skill and tact.*—It is quite possible, as we all know, to have treasured up stores of knowledge and yet to be ill prepared to communicate it to others. Many most scholarly men are wretched teachers; and not a few others who can communicate with facility, have no administrative ability. I am reminded of contrasts on these points supplied by classes in the University of Glasgow when I was a student. The Greek and Logic classes were presided over by Educators who were thoroughly furnished, were admirable in communication, and whose administrative ability was such that large assemblies of from ten hundred to ten hundred and fifty students were kept in perfect order. The class in mathematics on the contrary was taught by a professor, who while possessed of thoroughly accurate knowledge, failed to interest the students and equally failed to keep order. Hence it became a place of play rather than of work. It is so in schools. There are teachers who are in such sense educators that they have all under control: and the controlling power is not *dread*, but respect and love. Admitting that there are natural aptitudes in some, greater than are found in others, I cannot help thinking that much might be done in the matter of acquisition. Surely we may *learn* skill and tact. The physician does so, and especially the surgeon. One of the designs of our efficient Normal School system is to train up good workers in the department of education. There will always be certain original diversities arising partly from physical and partly from psychological causes, but every one fitted at all for the post of an educator, may become fairly skilful. Indeed it is mainly the application to the work in all its departments of good sound common sense!

3rd. *Enthusiasm.*—It need hardly be said in this presence that obstinateness, fussiness, noise, bustle are not meant, but a genuine, quiet, yet deep enthusiasm. I suppose this is more or less needful to success in any business in which men and women engage; to the educator it is of vast moment. Not only does it inspire himself with the energy, the courage, the perseverance ever seriously taxed but always necessary, it also infuses the same element of power into the breasts of pupils. One has often occasion to mark the influence of this element of an educator's character upon the plastic materials upon which he has to work. Pupils are borne along, putting forth unwonted exertions to improve, animated, *they* do not know how or why, by the enthusiasm of their teacher. With all their persistent requirements, strict discipline, and determination to be obeyed, such instructors are always favourites with their young charge. The very excitement is a pleasure, and the consciousness of progress and of acquired power is ever gratifying. Wayward as youth often are, they are cheered and stimulated by the conviction that they are making advances. They do not love to stand still, they often rashly repudiate the slow, and hence real progress gladdens them. And they love the teacher who aids in this.

I suppose the enthusiasm of an educator will depend very much, not only on the intensity of his temperament, but also on the depth of his convictions regarding the nobleness and importance of his work, and on his hopefulness as to the result. The desponding cannot be energetic—the downcast knows nothing of enthusiasm. Hence it must be admitted that devout confidence in God is a wonderful stimulus in the matter of a true enthusiasm. He who works hard, believes firmly, trusts God, and feels sure of His blessing, ever cherishes the hopefulness which helps his enthusiasm in the performance of duty.

In turning now to the *claims of the Educator*, one is brought at once into contact with a state of matters much to be deplored, namely: the fact, that the popular estimate of education is altogether unequal to its real importance. This defective estimate appears both in respect to education itself and to the educator. *So far* in favour of education all the community go cheerfully; reading, writing and arithmetic are needful to getting a livelihood; but how little beyond this do many regard as useful! They who advance a step higher often grudge the time and expense of a good sound culture. Perhaps in many instances one might be satisfied with whatever can be effectively done up to fourteen or fifteen years of age, for then a large proportion of our youth must begin their apprenticeship to some chosen business: but how much is often lost for want of a thorough appreciation of the importance of

education, prior to that age. And why should not a greater number of girls have higher advantages beyond that age?

They who feel a lively interest in these things are much gladdened by the steady progress of true and enlarged views in our community. We are not a little indebted to the respected president of this society and Principal of our University for this advance; he has been indefatigable in stirring us up to thought and action.

Moreover the profession of the educator does not stand so high in public estimation as it ought. I think there is continual improvement in this particular also, but there is room still for advance; but of this more presently.

1. The first claim of the educator is *respect*.—Children, boys particularly, are prone to use unbecoming liberty with the names and any peculiarities of their teachers. Every educator has his own idiosyncrasy which the young are quick to discover. If it be a matter out of which ridicule can be manufactured, that product is apt to appear. Now parents and friends should frown decidedly upon whatever interferes with true respect for the educator's person and office. It may be very witty to caricature Dominic Sampson and to utter his repeated "prodigious;" and doubtless there are peculiarities in us all on which a lively mimic may fasten for the amusement of his hearers, but such weapons are dangerous to that *respect* which ought to be entertained for the educator. And surely all parents and the friends of education should studiously discountenance whatever has a tendency to lower the influence of this profession.

Besides, the profession itself has a fair claim to a higher social standing than once obtained. This too is mending greatly; but the true point will not be reached until it is regarded as one of the learned professions. It is one of them and should be popularly so regarded. Of course its members in order to obtain their true social standing must be in character worthy of the position now claimed for them; but such qualifications existing, their elevated position should be recognized.

2. The second claim is *co-operation*.—Primarily is the educator entitled to the full co-operation of the *parents of his pupils*. This is of supreme moment. Without it he works throughout at a disadvantage. What mischief accrues from the often petulance and sad unwisdom of parents! An honest educator informs a parent of certain defects in his child which need correction. This is done simply for the child's good that there may be co-operation at home, with the work of the teacher at school. The foolish parent instead of being thankful for the honest and kind communication, cannot bear to have his children found fault with, and becomes estranged from the teacher instead of giving to him increasing confidence. Not only is this ruinous to the pupil but most disheartening to the educator. Parental co-operation is surely a primary and most reasonable claim.

The community generally may afford their co-operation by encouraging educators. They can do much by practical sympathy—attending examinations—and aiding well considered plans. In few things are our neighbours more to be commended than in their large and liberal co-operation with the educator. They will band together and expend largely in providing suitable premises and apparatus for the effective conducting of educational movements. Throughout the United States you meet at all points with munificent proofs of the people's regard for the work of the educator. The educator has a fair claim on all this in virtue of the vast importance to the community and to the nation, of his work.

3. The third claim is *liberal and prompt remuneration*.—The liberal element must be judged of by the nature and amount of work done, but from the lowest point of education to the highest we would have a generous estimate of the educator's claims to pecuniary recompense. In few relations are grudgings and hard bargains more repulsive, or more an outrage on propriety than in this. If fees are not sufficient, the community in some form should make up the deficiency. As I have already said, pre-eminently here is the labourer worthy of his hire. And of all grudging of expense, that for the sound education of one's children, seems the most unreasonable.

And then, *punctuality and promptitude* in payment is a most reasonable claim. I know not that one could express too strongly the grievous thoughtlessness if not something worse, of those who leave the educator, after his work has been faithfully done, to seek again and again with hope deferred which maketh the heart sick, for his well earned pecuniary compensation.

4. Without enlargement I mention one other claim, namely, *to the ear of the community*.—I think our educators should have opportunities to speak to us, and that we should candidly listen to them. Our community affords sometimes the opportunity and gives the listening ear: but not with the earnestness and enthusiasm which become us. When a Teachers' Association asks an audience of us, it is only true policy as well as propriety to grant their request. Let us consider their plans and aid them in carrying them out, for they are working for the ge-

neral welfare. It admits of consideration whether more might not be advantageously done throughout the rural districts as well as in the towns to bring the claims of the educator before the people, and to arouse their sympathy and aid in the great work in hand. These hints are intended more for parents and those who should be friends of the educator than for himself. Should they prove of the least service in promoting his work their utterer will be amply rewarded.

ARITHMETIC.

(Continued.)

I hope the two preceding examples will sufficiently show that if the dividend and divisor be both increased or diminished the same number of times, the quotient will remain unaltered, only the remainder, when any left, has to be reversely increased or decreased. But if *both* the divisor and dividend are not proportionally increased or decreased, the quotient will give a proportionate difference.

Example.

$$\begin{array}{r} 3)24 \\ \hline 8 \text{ quotient.} \end{array}$$

$$\begin{array}{r} 24 \\ 2 \\ \hline \end{array}$$

$$3)47$$

$$16 \text{ quotient} = 8 \times 2 = 16$$

$$\begin{array}{r} 8)16 \\ \hline 2 \text{ quotient.} \end{array}$$

$$2)8$$

$$4)16$$

$$4 \text{ q.} = 2 \times 2 = 4 \text{ quotient.}$$

It would at this stage be, perhaps, out of place to dwell farther upon the properties and principles of rules. A more advanced stage, when the pupil's mind is more fully developed, and he is better able to follow up with more advantage the theory of numbers, would be more suitable for farther unfolding and illustrating the properties of numbers. But he should now be sufficiently prepared for the application of numbers to some extent. To this let us now direct some attention, beginning with reduction.

1. Make your pupils familiar with two or three of the tables of most common use; and on these let them be so exercised that they shall not only know their different divisions and the relative proportions of denominations, but be able to change one denomination into another; tell how many of one is equal to another; how many times one is more or less than another; how many two, three, &c., of one would be equal to another, or exceed it; and by how many,—giving reasons for each answer, &c. The plainest language to be used—no technical term, unless well understood.

2. When well familiarized with a table, propose very simple questions. Answer these yourself, explain how you got the answers, and the steps by which you passed from one part of the processes to the other; the point at which you commenced the operation, and why; the necessary steps taken; the succession of these steps—what step should be the first—the second—the third, &c.,—why each must have its proper place in order to bring out the required answer and on obtaining the required result, why the answers must be correct—and how answers by different steps would not, &c. Immediately—make them explain to you in turn—with simple illustrations by themselves and by you in turn. Thus, continue the questioning and explaining reciprocally, till their answers and explanations tell that your training has effected your object, and has become to them an EFFECT OF THE UNDERSTANDING.

3. Give them then simple exercises, reducing tables to their lowest denominations. This is a very good exercise to make them understand how to change one denomination into another.

But first exercise them fully on a reduced table. No book questions should yet be given. Questions in arithmetic are not generally sufficiently plain, nor sufficiently graduated for beginners. Take the following as first step examples and illustrations for beginners:

Measure of value.

4 farthings = 1 penny, marked 1d.
12 pence = 1 shilling, " 1s.
20 shillings = 1 pound, " £1.

Reduced.

Farthings 4 = 1 penny.
Farthings 48 = 12 " = 1 shilling.
Farthings 960 = 240 pence = 20 shillings = £1.

Begin by making them repeat the names of the different denominations, thus, pounds, shillings, pence, farthings; farthings, pence, shillings, pounds, &c., &c.; and continue the repeating till the memory has got hold on them. Then exercise them on their relative values, by questioning and repeating; and make relative values, and reducing from one denomination to another be well understood. Begin explaining and questioning in the simplest conceivable way; so as to reach their understandings. The following will be found simple and effective—if so worked as to carry the child's understanding with you at each step.—First explain, by *application*, to your class, the meaning of the words you have to use, such as *worth*, *price*, *value*, &c., thus—I buy a book, a picture, or a ball, for one *penny*. To me then it is *worth a penny*, or *four farthings*, which are of the same *value*, by the table, as a *penny*. But if I pay *two pence* for the thing, I would have, in farthings, to pay for it *eight farthings*; if *three pence*, *three times four*, or *twelve farthings*, and so on to *twelve pence* = *forty-eight farthings*. Question them forward and backwards in this way—mixing explanations with your questions—till you are satisfied that the relative value of pence and farthings is clearly understood; how *four farthings* are *equal in value to one penny*; *twelve farthings to three pence*, *twenty-four farthings to six pence*; and *forty-eight farthings to twelve pence or one shilling*. Then, explain similarly the relative value of pence and shillings, thus, if *twelve pence* be *equal in value to one shilling*, then, *twenty-four pence* will be *equal in value to two shillings*; *thirty-six to three*; *forty-eight to four shillings*, &c. The relative value of shillings and pounds comes last. This is to be explained in the same manner. If a pound is equal in value to twenty shillings; then, two pounds are equal in value to forty shillings; three pounds, to sixty shillings; four pounds to eighty shillings, &c.

Before proceeding to the second step of advance, put a number of promiscuous questions to test their knowledge of what you have gone over. If you have succeeded to your wish, then proceed to the next step: if not, go carefully over the ground again, and give a greater variety and latitude to your explanations and examples. Succeeding well here ensures success in teaching reduction.

In the next step vary the training a little, thus,—how many farthings are equal in value to any number of pence you may mention, from one penny up to any number of pence you find they can work mentally with tolerable dexterity. Then reverse the process—how many pence are the same in value as any number of farthings you may name. Exercise them similarly on shillings and pounds. Give them then *numbers* and denominations promiscuously. This drilling will prepare them for slate exercises, such as the following:

Farthings.	Pence.	Farthings over.	Pence.	Shillings.	Pence over.
16	= 4	0	24	= 2	0
18	= 4	2	38	= 3	2
26	= 6	2	54	= 4	6
39	= 9	3	72	= 6	0
48	= 12	0	85	= 8	1

Shillings.	Pounds.	Shil. over.	Pounds.	Shil.	Pence.
30	= 1	10	8	= 160	= 1920
49	= 2	9	10	= 200	= 2400
78	= 3	18	15	= 300	= 3600
105	= 5	5	25	= 500	= 6000

Farth.	Farth.	Farth.	Farth.	Farth.	Farth.	Farth.	Pence.
28	+ 36	+ 19	= 83	23	+ 16	+ 37	= 19
32	+ 17	+ 28	= 77	16	+ 19	+ 13	= 12
40	+ 25	+ 36	= 101	29	+ 35	+ 4	= 17

Farth.	Pence.	Shil.	Farth.	Farth.	Pence.	Shil.	Pence.				
16	+	19	+	30	=	1530					
23	+	16	+	5	=	81	3 farth				
10	+	40	+	27	=	1466					
29	+	11	+	14	=	186	1 "				
14	+	35	+	16	=	922					
						15	+	45	=	555	0 "

Pence.	Shil.	Shil.	Pence	Shil.	Pounds.	Shil.
38	× 38	= 41	2 pence	73	+ 5	= 173
45	+ 105	= 108	9 "	47	+ 13	= 307
72	× 200	= 206	0 "	28	+ 15	= 328

Farthings.	Pence.	Shil.	Pence and farth.
97	= 24 ¹ / ₄	= 2	0 ¹ / ₄
87	= 21 ³ / ₄	= 1	9 ³ / ₄
427	= 106 ³ / ₄	= 8	10 ³ / ₄
342	= 85 ³ / ₄	= 7	1 ³ / ₄
571	= 142 ³ / ₄	= 11	10 ³ / ₄
684	= 171	= 14	3
247	= 61 ³ / ₄	= 5	1 ³ / ₄

Pence.	Shil.	d.	£.	s.	d.	Shil.	£.	Shil.
600	= 50	0	= 2	10	0	757	= 37	17
500	= 41	8	= 2	1	8	299	= 14	19
750	= 62	6	= 3	2	0	420	= 21	0
872	= 72	8	= 3	12	8	1932	= 96	12
599	= 49	11	= 2	9	11	4567	= 228	7

Such exercises as these, graduated so as to suit the capacities of your pupils, are to be continued till a clear understanding of principles and processes,—of the regular sequence of steps,—why one step of the process must precede, or succeed another,—why another would not give a correct denominational value,—and when a right result is obtained, be able to give a reason,—is GAINED BY THEM, in a short time they will acquire sufficient knowledge of the principles and sequent processes of the rule to enable them to apply them in all the higher rules.

Let us now take avoirdupois weight as a very good weight for table-training, being so generally used.

Avoirdupois weight.—16 drams = 1 ounce.
16 ounces = 1 pound. (lb.)
28 pounds = 1 quarter. (qr.)
4 quarters = 1 hundred weight. (cwt.)
20 cwt. = 1 ton.

Reduced.

Drams.
16 = 1 ounce.
756 = 16 = 1 pound.
7168 = 448 = 28 pounds = 1 quarter.
28672 = 1792 = 112 pounds = 4 quarters = hundred weight.
573740 = 35840 = 2240 pounds = 80 quarters = 20 h. w. = 1 ton.

Or thus:

1 ounce = 16 drams.
1 pound = 16 oz. = 256 drams.
1 quarter = 28 lb. = 448 ounces = 7168 drams.
1 cwt. = 4 qrs. = 112 lbs. = 1729 ounces.
1 ton = 20 cwt. = 80 qrs. = 2240 lbs. = 35840 oz. = 573660 drs.

1. First, familiarize them with the divisions of the table, and the names of these divisions; then with their relative places.

2. When they know these well, explain to them their relative weights: that an ounce is as heavy as 16 drs.; or that 16 drs. is equal in weight to 1 oz.; or that 1 oz. and 16 drs. are the same

in weight. A pound, 16 oz. and 256 drams, equal each other in weight; that is, a *pound* equals 16 oz., and 16 oz. are as heavy as 256, $16 \times 16 = 256$ drs., &c. Go over the whole table in this way, questioning and illustrating till they, by answers, make it manifest that the relative weight of denominations is clearly understood by them.

3. Then question them as follows: which is heavier 1 dr. or 1 oz.? If an ounce is heavier, how many times is it heavier? Divide the ounce into sixteen parts; to what would each part be equal in weight? If each part be equal in weight to *one* dram, how many would eight parts want of an *ounce*? Then half an ounce would be the same weight as *eight* drams, would it? Then take a *pound*, an *ounce*, and a *dram*, and make them tell their relative differences in weight:—how many *drams* would equal *pound*; how many *ounces* would be the weight of a *pound*; how many would 6 oz., 8 oz., 12 oz., 15 oz., *each*, want of a *pound* weight?—Into how many divisions would you make a *pound*, so that each division would be the weight of *one dram*?—Two hundred of these divisions, or two hundred drams, would they equal a *pound* in weight? If not, how many more would you add to give the weight of a pound? And so on. Take then quarters, hundred weights, and tons, and question them on each similarly. This will prepare them for the next step, viz., oral and slate exercises.

Oral exercises.

5 ozs. } 7 " } 12 " }	Are equal in weight, to how many drams?	{ = 80 drs. = 112 " = 192 "
8 lbs. } 9 " } 12 " }	Equal each of these in ounces.	{ = 128 ozs. = 252 " = 336 "
2 qrs. } 3 " } 4 " } 5 " }	Give the weight of each number in lbs.	{ = 56 lbs. = 84 " = 112 " = 140 "
12 cwt. } 18 " } 22 " } 30 " }	How many quarters in each of these?	{ = 48 qrs. = 72 " = 88 " = 120 "
4 tons. } 5 " } 7 " }	Change each of these into cwts.	{ = 80 cwts. = 100 " = 140 "

Slate exercise.

435 } 800 } 5742 }	Ounces to drams.	{ = 6960 = 12809 = 91872 } drams.
587 } 8741 } 2887 }	Drams to ounces, &c.	{ = 36 ozs. 11 drs. over. = 546 " 5 " " = 180 " 7 " "
286 } 365 } 299 }	lbs. reduce to cwts., &c.	{ = 2 cwts. 2 qrs. 6 lbs. = 3 " 1 " 1 lbs. = 2 " 2 " 19 lbs.
573 } 884 } 236 }	qrs. to be given in cwts.	{ = 143 cwt. 1 qr. = 221 " = 59 "

Make them reverse processes; and as they advance gradually make questions more complex, as follows:

Reduce 7895 ozs. to cwt.; and the cwt. back to lbs.—proving and explaining each step of processes.

Reduce 7842 qrs. to ounces; the ozs. to tons, and then the tons to lbs.—giving reasons for processal steps, &c., &c.

JOHN BRUCE,
Inspector of Schools.

(To be continued.)

Discouraging Attempts to Sing.

"Jane, what are you trying to sing, the tune sung by the old cow when she died? What a discord!" Jane stopped singing, dropped her head upon the desk, and the bitter tears ran down her cheeks. The rest of the scholars laughed at the remark, and then proceeded to sing the remaining verses of the song; but although its harmony was not as before broken by the discordant tones of Jane's untutored voice, yet there was not the enjoyment usually experienced in this favorite exercise of the school, for a schoolmate's feelings had been wounded, and there was a real sympathy with her distress, caused by the teacher's thoughtless remark.

Seeing its effect, he was sorry for having spoken in such a manner, but thought that it would be forgotten by the morrow. Forgotten! all else might forget, but the remembrance of those words would always remain with Jane, to keep her, in future, from the vain attempt to sing. No, dearly as she had cherished the idea of becoming a singer, she would bury the desire, rather than subject herself to ridicule again. To her the fact that the teacher ridiculed her efforts, was evidence that she could never learn, and for the future she would be a sad and envious hearer when the school joined in singing, sighing that God had not given her an ear capable of distinguishing musical sounds.

I have not, in this brief sketch, overdrawn the picture. From my own observation, I am led to believe that a very large number of boys and girls who have a real taste for music, and a longing to become singers, fail to do so just because their parents and teachers thoughtlessly discourage them by ridiculing their first efforts. Many teachers sacrifice the interests of such pupils to the harmony of a school choir, and, instead of pointing out pleasantly the difficulty and striving to cultivate the ear, they seek the offenders and request them not to sing, or make some remark calculated to ridicule them into stopping; and in nine cases out of ten, sensitive scholars will abandon the effort to learn, considering themselves unable to acquire the art.

Teachers, is this right? Would you pursue a similar course with a scholar in penmanship? If he failed to see at once the peculiar curves of each letter and to execute them, would you ridicule his attempts? By no means. You know that the eye must be trained to notice all the peculiar turns and then the hand taught to execute them, and, however rude and laughable the first characters may be, you encourage the pupil and lead him step by step forward towards success. Is it less necessary to encourage attempts to sing? Few are born with a knowledge of music more than of penmanship. It is true that some catch musical sounds much quicker than others, and we say they are born to be singers, but this quickness of perception in the ear is not more remarkable than that in the eye of many penmen, and if there are no defects in voice, I cannot see why a dull ear may not be cultivated to appreciate distinctive tones in music as well as a stupid eye can be brought to distinguish the curves of the letters in his copy.

It is an indisputable fact that there is among the young an almost universal love of music, and an equally universal desire to sing, and, without saying anything of the advantages of music at this time, I desire to know how *nearly* universal it may be made. I would suggest that some teacher of music give, from experimental knowledge, his ideas of dull ears in music, and how large a proportion of such may be cultivated.—*Rhode Island School Master.*

The Words we Use.

Be simple, unaffected; be honest in your speaking and writing. Never use a long word where a short one will do. Call a spade a spade, not a well known oblong instrument of manual industry; let home be a home, not a residence; a place a place, not a locality, and so of the rest. Where a short word will do, you always lose by using a long one. You lose in clearness, you lose in honest expression of your meaning; and in the estimation of all men who are competent to judge, you lose in reputation for ability.

The only true way to shine even in this false world, is to be modest and unassuming. Falsehood may be a very thick crust, but in the course of time truth will find a place to break through. Elegance of

language may not be in the power of all of us, but simplicity and straightforwardness are.

Write much as you would speak; speak as you think. If with your inferior, speak no coarser than usual; if your superior, speak no finer. Be what you say, and within the rules of prudence, say what you are. Avoid all oddity of expression. No one ever was a gainer by singularity of words, or of pronunciation. The truly wise man will so speak that no one will observe how he speaks. A man may show great knowledge of chemistry by carrying about bladders of strange gases to breathe, but he will enjoy better health, and find more time for business, who lives on common air.

When I hear a person use a queer expression, or pronounce a name in reading differently from his neighbor, the habit always goes down, minus sign before it; it stands on the side of deficit, not of credit. Avoid, likewise, all slang words. There is no greater nuisance in society than a talker of slang. It is only fit (when innocent, which it seldom is,) for raw school boys and one term freshmen to astonish their sisters with. Talk as sensible men talk; use the easiest words in their commonest meaning. Let the sense conveyed, not the vehicle in which it is conveyed, be your subject of attention.

Once more; avoid in conversation all singularity of accuracy. One of the bores of society is the bore who is always setting you right; who, when you report from the paper that 10,000 men fell in some battle, tells you that it was 9,999; who when you describe your walk as two miles out and back, assures you that it lacked half a furlong of it. Truth does not consist in minute accuracy of detail, but in conveying a right impression; and there are vague ways of speaking that are truer than strict fact would be. When the Psalmist said "Rivers of waters run down mine eyes, because men keep not thy law," he did not state the fact, but he stated a truth deeper than fact, and also truer.—*New-York Teacher.*

OFFICIAL NOTICES.



APPOINTMENTS.

EDUCATION OFFICE.

His Excellency the Governor General in Council was pleased, on the 6th March and 15th November last, to approve of the following appointments:

André Napoléon Montpetit, Esquire, Advocate, to be French Corresponding Clerk, Assistant Editor of *Le Journal de l'Instruction Publique*, and Librarian.

Mr. Pierre Chauveau to be Assistant Clerk of Accounts and Statistics.

SCHOOL INSPECTORS.

His Excellency the Governor General in Council has been pleased to make the following appointments:

Bolton McGrath, Principal of Aylmer Academy, William Jessie Alexander, Principal of Roxton Academy, and Michael Stenson, Teacher, Esquires, to be Inspectors of Schools.

Mr. McGrath will have charge of the Protestant Schools of the Counties of Ottawa and Pontiac, in place of William Hamilton, Esquire, resigned.

Mr. Alexander, who succeeds to Dr. Bourgeois, resigned, will have charge of the Schools of the Counties of Drummond and Arthabaska,—the Protestant Schools of Chester, Tingwick, Kingsey, and Durham, excepted;—and he will also have charge of the Schools of the township of Bagot, in the County of Bagot, and of the Catholic Schools of the County of Shefford.

Mr. Stenson will have charge of the Catholic Schools of the Counties of Richmond, Wolfe, Compton and Stanstead; also of the Catholic Schools of the electoral Town of Sherbrooke.

EXAMINERS.

His Excellency the Governor General in Council was pleased, on the 14th March last, to appoint Rev. William Bennett Bond, M. A., and Rev.

John Jenkins, D. D., members of the Board of Protestant Examiners of Montreal, in the room and stead of the Rev. William Snodgrass, absent, and Rev. Dr. Flanagan, deceased.

SCHOOL COMMISSIONERS.

His Excellency the Governor General in Council was pleased, on the 14th ult., to approve of the following appointments of School Commissioners:

County of Champlain.—Batiscan: Flavien St. Mars.

County of Ottawa.—Hartwell: Octave Lamarche.

Same County.—Ste. Angélique: Amable Filiatrault.

County of Iberville.—Town of Iberville: F. X. Mongran.

County of Terrebonne.—Ste. Adèle: Messrs. Jules Meilleur, J. B. Le-gault and Pierre Lacasse, *jr.*

His Excellency the Governor General in Council was pleased, on the 7th instant, to make the following appointment of a School Commissioner:

County of Laval.—Le Bas du Bord de l'Eau de St. Martin: Mr. Antoine Terrien.

TRUSTEES OF DISSENTIENT SCHOOLS.

His Excellency the Governor General in Council was pleased, on the 23rd March last, to make the following appointments of Dissentient School Trustees:

County of Shefford.—Shefford: Messrs. Edouard Perras and Ludger Côté.

His Excellency the Governor General in Council was pleased, on the 7th inst., to approve of the following appointment of a Dissentient School Trustee:

County of Shefford.—Milton: Mr. Sewell Samuel Kent.

ERECTIIONS, &c., OF SCHOOL MUNICIPALITIES.

His Excellency the Governor General in Council was pleased, on the 7th instant, to direct,

That that portion of the newly constituted Parish of St. Sébastien heretofore comprised within the School Municipality of Clarenceville, shall remain annexed to Clarenceville until the 1st of July next (1865); and that the portion which belonged to the Parish of St. George of Henryville shall remain annexed to the last mentioned parish as School Municipality until the 1st July next, and that the said parish of St. Sébastien as civilly erected shall, from that date, form a School Municipality.

DIPLOMAS GRANTED BY MCGILL NORMAL SCHOOL.

Mr. Francis Hicks, B. A., received a diploma for Academies from the McGill Normal School.

March 29, 1865.

DIPLOMAS GRANTED BY BOARDS OF EXAMINERS.

BOARD OF EXAMINEES OF THREE RIVERS.

1st Class Academy (E. & F.)—Miss Léonie Hébert.

1st Class Model School (E. & F.)—Misses M. S. Elia Blanchette and Mathilde Goudreault.

1st Class Elementary (F.)—Misses Lumina Bussières, Eugénie Eloise Duplessis, Marie Elise Larose, M. Hedwidge Pratte.

2nd Class Elementary (F.)—Misses Lumina Constantineau, Elmire Duquay, Sophie Fafard, Rose de Lima Godin, Rosiane G. antel and Henriette Marchand.

SHERBROOKE BOARD OF EXAMINERS.

2nd Class Elementary (E.)—Miss Catherine Dougan.

Feb. 7, 1865.

S. A. Hurd,
Secretary.

SITUATION WANTED.

A Teacher holding a Diploma for Academies and who is competent to teach English and French. Enquire at this Office.

JOURNAL OF EDUCATION.

MONTREAL (LOWER CANADA), APRIL, 1865.

Elementary Education in France. (1)

The report of the Minister of Public Instruction for 1863 on the state of elementary education in France, which the Government has just published, has been very generally commented upon in the Paris press and has provoked much opposition. Containing information of the greatest practical value, this document, of unusual interest besides, has been objected to on account of some recommendations which it contains, and which, if acted upon, would establish a system of gratuitous instruction and compulsory attendance at school.

Without stopping to examine the merits or demerits of these suggestions, which, the *Moniteur* explained, were published as expressing the personal opinion of the minister only, and not as indicating the policy of the government in the matter, we shall proceed to lay before our readers a short *résumé* of this very elaborate paper.

The number of children in attendance at the primary schools of France had risen from 1,935,624 in 1832 to 3,530,125 in 1847 and to 4,336,368 in 1863; showing an increased ratio of from 59 pupils in every 1000 inhabitants at the first mentioned period, to 116 pupils in a like number of inhabitants at the date of the report. The number of public schools opened since 1847 was 3,566, affording instruction to 806,233 children and representing an annual increase of 50,000 in the number of children attending school. (2)

818 *communes* only are reported as without schools, in most of which however the children attended school in the adjoining *parishes*.

Taking the children of school age as defined in the regulations (7 to 13 years), it would appear that of the 4,018,427 returned in the inspectors' census of 1863 for the whole of France, only 3,133,540 attended the primary schools, leaving 884,887 as the number of children of this class who did not attend. It is true that the university enumeration reduces this number to 692,678, but as the teachers who compile the statistics have no means of ascertaining how many children are permanently absent from school in the cities, these figures are believed to fall short of the truth. Whatever may be the actual balance in this case, it is not to be inferred that the whole number of these children are totally deprived of instruction; many in fact receive lessons at home or attend the junior classes in superior institutions of learning, while others enter school one or two years after they have reached the lowest age prescribed or leave before attaining the highest.

The period of school attendance is, in general, regulated by the requirements of religious instruction, few children remaining at school after these have been fulfilled. There was no means of ascertaining the exact number of boys between the ages of 8 and 11 who did not pass through the public schools in 1863; but from data obtained by the administration it was apparent that of this restricted class, the number of non-attendants could not exceed 200,000.

Of the whole number of children frequenting the primary schools, 34.6 per cent., or over one third, attended during a period of less than six months. Of 657,401 pupils who left the schools

in 1863, 395,393, or 60 per cent., could read, write and cipher, while 262,008, or 40 per cent., had totally or partially failed to acquire a knowledge of these elementary branches.

The rolls of the conscription and the registers of marriages furnish evidence pointing to the same conclusion. In 1862, 27.49 per cent., or nearly one third of the conscripts could neither read nor write; in 1830 the percentage was 43.73. Of the men who married in 1853, 33.70 per cent. could not sign their names; the percentage in 1862 being 28.54; of the women, the percentage was 54.75 and 42.26 during the same years respectively, giving an average of .7 and 35.90 per cent. for both sexes.

Thus it appears that nearly one third of the conscripts are unable to read or write; 36 per cent. of those who marry cannot sign their names; more than one fifth of the children of school age did not attend school in 1863, and that of the four fifths present the majority attended irregularly and only during a comparatively short time.

During the last sixteen years the number of illiterate conscripts diminished by $7\frac{1}{2}$ per cent. only, a progress so slow that the Minister foresees that a considerable time must elapse before elementary education shall have become as widely diffused as in Germany, where the illiterate conscripts number but 2 or 3 per cent.

The statistics having reference to the criminal classes offer much that is suggestive of serious reflections. Of the 4,543 persons arrested for crimes in 1863, 1756 or 33 per cent. were quite illiterate, and 1964, or 43 per cent. could read or write but very imperfectly, thus showing that 81 per cent. of this unfortunate class had been deprived of the benefits of elementary instruction.

To effect the object which the Minister has in view, various suggestions of more or less importance are made, among which we find the improving of the methods of instruction followed in the schools, the promoting of the usefulness of teachers and the influence of school inspection, the stimulating of a healthy spirit of emulation in both teachers and pupils; financial reforms; the building of schoolhouses wherever they may be needed; adding to old schools as regards buildings, furniture and libraries; and last, though not least, the recommendations having reference to gratuitous instruction and enforced attendance, and which, as we have said above, were received with marks of disapprobation by a great part of the press.

These recommendations are supported by a detailed comparison of the French system with those pursued in other countries, but the opposition to which we have adverted above, caused the Government to hesitate before adopting them. A sort of compromise between the views of the Minister and public opinion will accordingly be found in the following propositions submitted by the Emperor to the Council of State. 1st. Teachers in independent elementary schools shall not be required to hold diplomas. 2nd. Communes whose population exceeds 500 shall be bound to maintain a girls' school. 3rd. Prizes for assiduity to be given to pupils attending the public schools regularly between the ages of 7 and 13. 4th. Female teachers to receive a minimum salary of 500 francs per annum. 5th. The stipends of male and female teachers acting conjointly to be elevated, and the appointment of such teachers entrusted to the Prefect. 6th. The right to establish free schools previously accorded to the communes to be rendered more effective in practice, for which purpose a tax shall be levied and, in cases of deficiency, grants from the Government shall be accorded. The male teachers in such schools to enjoy a fixed salary.

Evening Classes of the Montreal Mechanics' Institute.

PUBLIC DISTRIBUTION OF PRIZES.

Last evening a public examination of the classes of the Mechanics' Institute, took place in the hall of that building, an interested auditory being present.

(1) The highly interesting report of M. Duruy is being published in *extenso* in our French Journal.

(2) These figures include the schools and pupils in the three annexed Departments. In Savoy and the County of Nice the public schools numbered 1,528, and the pupils attending the public and the independent schools, 86,812.

The chair was taken at 7:30 by J. C. Becket, Esq., and upon the platform were his Lordship the Bishop of the Diocese and Metropolitan; the Hon. P. J. O. Chauveau, Superintendent of Education for Lower Canada; Hon. T. D. McGee; the Rev. Dr. Taylor, and other gentlemen.

Arranged on tables in front of the platform were a number of well executed specimens of architectural and mechanical drawings, as well as specimens of writing, all of which reflected great credit both on the classes and their teachers, and demonstrated the great benefits which must result from such a system.

Mr. J. C. Becket in opening the proceedings, addressed those present as follows:—

Ladies and Gentlemen,—The place I have the honor to occupy this evening seems to involve some explanation of the object of our meeting. It may be thought also that advantage should be taken of this opportunity of bringing before the public the importance, as well as the aims and object of the Mechanics' Institute. But fortunately I need not say much on either of these points, as we are to be favored with the assistance of others this evening, who will, no doubt, do them justice. I may be permitted to say, however, that though our Institute, as its name implies, should be sustained by the mechanics of this city, at least the English-speaking portion of them, yet we would not have it understood that it is, or should, be confined to that class of the community; on the contrary, we think it would be for the interest of all classes, without distinction, to foster and encourage this and similar institutions, by extending to them a cordial and liberal support, for it cannot be doubted that just in proportion to the general enlightenment of the masses, and the prevalence of correct principle as a rule of action, will the best interests of the entire community be promoted. Our present membership embraces only 641, individually divided into four classes:

Life Members	257
1st Class do.....	80
2nd Class do.....	100
3rd Class do.....	204

Life members by the payment of \$20 purchase for life the privileges of the Institute. The three last named classes, by the payment of \$3, \$2, \$1, respectively, have the free use of the well-stocked library, reading-room, classes, and occasional lectures. This latter, for two or three years past, has not been attended to as it ought; in the future, no doubt, steps will be taken to revive these. The more direct business of the evening, as announced, is the examination of the classes and the distribution of the prizes. The teachers will conduct the examination. The prizes allotted to the drawing-class will be distributed by His Lordship Bishop Fulford, and those of the English class by the Hon. T. D'Arcy McGee. The studies in the English class have been: writing, spelling dictation, arithmetic and book-keeping. With respect to the studies for these prizes, it should be explained that in two or three cases though only one prize has been awarded, more than one was merited by the same individual, but the Committee thought it better to extend the prizes over the pupils as generally as circumstances would permit. We ought also to state that the attendance upon the classes this season has been unusually good, and the attention bestowed by the scholars generally gratifying to the teachers. Complaints having been made in former years of the inattention of the members, especially of the English and French classes—for we have had French classes also, but not during the past winter—it was agreed this season to require all to pay 1s. 3d. as an entry fee, with the understanding that this would be returned to all who were orderly and attentive to the duties of the class.

	Pupils.
English Class	70
Drawing Class, Architectural	27
do Mechanical.....	9

I would only further remark, the friends of the Institute ought to know, that in years past, these classes have been the means of great good, it has come to our knowledge that there are several now in prominent positions, filling responsible situations, whose first lessons, in drawing especially, were obtained in these classes. Indeed the present teacher of the drawing class had not only his first lessons here, but also a taste awakened for such studies as promise at no distant day to place him in the front ranks of his profession. We will now proceed with the examination of the classes, and will take first the English class.

Mr. Muir then proceeded to examine the English class, who went through a number of exercises, testing their knowledge of Etymology and writing, with great credit. Mr. Muir explaining that he did not intend to go into a full examination, but only so far as to give an idea of the progress made by the members of the class.

Mr. Hutchison then proceeded with the examination of the drawing classes in practical geometry, as applied to mechanics. He then put a few questions relative to the simpler orders of architecture, such as the Tuscan, Doric, and Ionic, to shew the knowledge acquired of the elements of architecture. In conclusion, he spoke of the want of a modelling room, where pupils could construct objects from their drawings.

The exercises being brought to a conclusion, the Chairman announced an address by the Lord Bishop of Montreal, who would afterwards distribute the prizes for the drawing classes.

The Lord Bishop said—In distributing these prizes, I shall not attempt to enter largely into any discussion of the nature of your particular studies, such as your architectural drawing, and so forth. I shall especially avoid going into the details of such studies, as I should, thereby, perhaps, only expose my own ignorance, these not being branches that I am deeply learned in. But at the same time, I may express generally my satisfaction at seeing that this school seems to be increasing in value, united with increasing attention and usefulness as regards the pupils, during preceding years, as we have been told by the President of the meeting. Some years ago, when this building was first opened, I was asked to deliver a lecture here, when I particularly noticed the fact that persons like yourselves, connected with the Mechanics' Institute, would enjoy the advantage of classes for instruction, in which they might carry on their studies even after they had entered on the varied business of life. The presumption is, that all you who come here now, being voluntary students, really come for the purpose of making the best use of your time, independent of the positive amount of knowledge you may gain. For you should bear in mind, that if you are really making good use of your time, you are gaining those advantages arising from the improvement of your general faculties by their application to any particular study. There may be some branches of study that draw out the mind more than others, but there can be no branch of study carefully carried out that will not bring its own special advantages to the mind, in enabling it to concentrate itself upon a particular subject, and give the mind a clearness of thought and understanding, and application for any other purpose in after life. There are, no doubt, among all communities, now and then, what we may call master minds, that will distinguish themselves under any difficulties, and overcome any obstacles in either acquiring knowledge, or pushing themselves on in life; but these are the exceptions. The generality of men are those possessed of average abilities, and who cannot be expected to force their way on like those few exceptions I have mentioned. But if there are facilities given for improvement and study, in any way, there are a great many who might be very well qualified to take advantage of them, and profit by them in after life; and especially in a community like this, where there are such openings in life for all of you; it is of very great importance you should not lose such opportunities as are now afforded you in classes of this value. I see here a silver medal, which will be given by and by to one who is considered to have distinguished himself in general proficiency; and I may mention—I hope without any improper allusion to my own early life—that, though it is now nearly half a century ago, I remember, when I was at school, having had a silver medal given to myself. And I now remember perfectly well the satisfaction I experienced at having that little honorary distinction conferred upon me. I treasure it to this day as a memorial of my school days, and I trust that any prizes you may get now will be, in the same way, retained by you hereafter as memorials of your progress, and as a stimulus to the further prosecution of your studies, and not be regarded as a matter of mere gratification at the moment. I shall not take up more of your time by making other remarks, but proceed at once to the distribution of the prizes. (Loud applause.)

His Lordship now gave out the following prizes in the order observed:—

ARCHITECTURAL CLASS.

1st Prize, John Rutherford, a set of compasses from Dr. Bernard; 2nd do, George Scott, a set of Planes, from H. Evans, Esq.; 3rd do, Thomas Ford, a set of Squares, from C. Snowden, Esq.; 4th do, Rufus Dorman, a set of Instruments.

MECHANICAL CLASS.

1st Prize, H. Ward, set of Instruments; 2nd do, H. B. Warren, a spirit level, from J. Walker & Co.

The chairman then introduced,

The Hon. T. D. McGee who came forward and said, that it was only in consequence of the absence of Mr. Chamberlin that he was present. Hitherto he had had an honorary connection with the institution, but until that evening he had never been with them. He would take the liberty of urging upon the English class the importance of

good spelling and laying a proper foundation for a clear manly style of hand writing. He was in the habit of receiving many hundreds of letters himself, and he thought people often formed opinions of a man by his writing and spelling. There were some fortune-tellers who would predict whether an individual was to be married two or three times, and other circumstances, from a specimen of his calligraphy. Without going so far as this, however, he had no doubt that many a fellow lost his chance in life by inattention to this important point. The presumption was that where a man wrote a good hand, with bad spelling, he was a careless man, as if he had ability to learn to write well, he ought also to have acquired a knowledge of spelling. As the two stepping-stones to success, every boy not absolutely stupid, ought to acquire a knowledge of spelling and writing; and he was glad to see from the few slates not rubbed out, that the class did credit to Mr. Muir. He regretted to hear that in consequence of the difference in the ages of the pupils, and other circumstances, it had not been found possible to continue a class for English grammar, as it would be a great advantage. He would make it the basis of an appeal to the master mechanics of Montreal for supporting the Mechanics' institution, especially when they considered the benefits accruing to the rising generation therefrom. There ought to be as many master mechanics willing to support the institution at least, as there was life members, and many more than there were members in the other classes. They had seen that night whoever gave support to the institution was laying the foundation of that leading industrial position which was destined to be one of the characteristics of Montreal. The great object was to make the mechanics class capable of undertaking the higher branches of their art. What made some artists more valuable than others? He knew men in New England travel far and wide in search of such men, and even cross the Atlantic in search of them, in order to place them at the head of their establishments. The hon. gentleman then remarked that if the attention of young men could be turned to the higher branches of these pursuits, it would be much better than their going into the over-crowded professions where, in order to retain a position very little better, it was necessary to keep up certain appearances. He would ask the master mechanics to support the Institution in such a manner that in future the pupils of the different classes would fill the whole room. With these few remarks he would present the medal to Robert Hythe for general proficiency. The hon. gentleman then distributed the following prizes with many humorous remarks, which elicited much applause.

ENGLISH CLASS.

For general proficiency Geo. Hyde, a silver medal from Class Com.

PENMANSHIP.

1st Prize, H. W. Becket, "Life of General Wolfe;" 2nd do, James Clelland, "Chemistry of Common Life," 2 vols.

DICTATION.

1st Prize, E. O'Connor, "Speke's Journal;" 2nd do, George Baltery, "Archaia."

ARITHMETIC.

1st Prize, J. H. Jackson, "Arctic Researches;" 2nd do, John Mearns, "The Peasant Boy Philosopher."

ATTENDANCE AND DILIGENCE.

1st Prize, Wm. Salter, "Life of Franklin;" 2nd do, Wm. Clelland, "Self Help."

Mr. Becket then stated he had to introduce something that was not in the programme. The drawing class intended to present their teacher with two handsome volumes, at which, he presumed, the whole class were equally delighted. The volumes were the "Imperial Gazetteer."

Mr. Hutchison, who had assisted in the distribution of the prizes, then stated it was the first time he had heard of the affair. Addressing his class as fellow-students, he said that parties on this occasion were told before hand; but this not being the case in the present instance; it was out of his power to thank them. He would, however, give them a few words of advice. Mr. Hutchison then stated the fact which had pleased him most was the regular attendance of the members of the class during the winter. He then pressed upon them the necessity of hard study. Alluding to his own early experiences, he asserted that if they set their minds to acquire knowledge books would be sure to come to hand. (Cheers.)

The Chairman then introduced the

Hon. P. J. O. Chauveau who said that it only remained for him to

congratulate them on the satisfactory nature of the proceedings. The question of the Industrial Schools was that of the day all over Europe. He trusted the beginning made here would be an example to the rest of the country, such schools having been established in France, Belgium and elsewhere. Referring to evening classes, he observed they met the wants of a large class in the community, especially of children who had to spend the day in earning their daily bread, and he thought in this matter the children in cities had the advantage of those in the country. He said that the fact of young men attending evening classes was one of the best certificates they could have. A large proportion of them got on in the world, of which there were many examples known in other countries, which show that if a man was determined to get on he could do so. Knowledge acquired under difficulties was more prized. As example was better than argument, he would relate an instance. The hon. gentleman then related an instance of a young man who came to Quebec, being unable to either read or write, and attended evening classes. At the time of the war of 1812, he entered into a trade and realized a small fortune. In gratitude for his success, he was one of the most zealous and generous founders of the charity schools in his city, and died with a fortune large for the times (about £30,000.) The grand son of that man who was then addressing them was sent to college and taught all sorts of things, but, he was sorry to say, after all, would not leave so much money behind him. (Cheers and laughter.)

Dr. Taylor, in consideration of the late hour, confined himself to a brief expression of the importance and value of the Mechanics' Institute, and said he would leave that meeting with a deeper sense of its claims for support.

The Chairman, in conclusion, thanked the gentlemen who had assisted to carry out the programme, and also the audience present, whom he regretted were not more numerous.

The proceedings then terminated.—*Montreal Gazette.*

NOTICES OF BOOKS AND PUBLICATIONS.

RUSSELL.—Canada; its Defences, Condition and Resources; By W. H. Russell, LL.D. London, 1865; Bradbury and Evans, 8vo. pp. 352, two maps.

The special correspondent of the *Times*, as in duty bound, has turned to good account his short excursion to Canada. When we consider out of what scanty materials, and with what a slender acquaintance with men and things this volume has been manufactured so as to be brought out just at the time when the defences of Canada are the chief topic of the day, we feel inclined towards indulgence and lenity for the very many blunders, historical, social and geographical which it contains. There is less of that patronising tone usually to be found in European books on America; and the several elements of our society get something like fair play at the hands of Dr. Russell.

He is also one of those who have not made up their mind to give up at a moment's notice, the good old British device "Ships, Colonies and Commerce," and the whole book is a talented and sincere apology for the colonial system. This is particularly refreshing at present.

We therefore see no great harm in Dr. Russell mistaking the river St. Charles for a lake, or conducting the Rideau canal from lake Huron to the Ottawa, or speaking of the *Jesuit* Hennepin, when this rather inaccurate writer is known to have been far from even friendly to the sons of Loyola; these are mere matters of detail that can be easily corrected by those who know better and will not poison the mind of the uninformed reader. Neither shall we call him to account for describing as *something very much like daubs*, the remarkable tableaux which adorn the nice Louis XV chapel of the Ursulines convent, and which were brought from France at the time of the revolution by the abbé Desjardins who was afterwards vicar general of Paris.

A good many exceptions of a more important character might be taken to other passages in the work; the efforts of the French missionaries for instance, in the days of Champlain and of Frontenac, are grossly misrepresented, the author going even the length of saying that Indians were converted only that they might rage with greater fierceness against their brethren.

The following is a *résumé* of the military views and opinions of the author.

"Permanent works might be erected at St. John's, the Isle aux Noix and St. Helen's Island, where forts should be reconstructed on improved principles. But the most obvious measure, in the opinion of some engineers, the fortification of the hill over the city, and the

erection of a Citadel upon it, which would render the mere occupation of the town below valueless to an enemy, is not approved of by more recent authorities.

"Gunboats on Lake St. Louis would prove most valuable in defending the works at Vaudeuil.

"Quebec is however the key of Canada; and that key can be wrested from our own grasp at any moment by a determined enemy, unless the recommendations so strongly urged from time to time by all military authorities meet with consideration. The old enceinte should be removed, and the French works restored, according to the suggestions of scientific officers, and of the ablest engineers we possess. An entrenched camp might be marked out to the west of the Citadel, with a line of parapet and redoubts extending from the St. Lawrence to the St. Charles river. In order to cover the city from an attack on the south side, it would be necessary to occupy Point Levi, and to construct a strong entrenched line, with redoubts at such a distance as would prevent the enemy from coming near the river to shell the city and citadel. But it is evident that they are *nil ad rem*, unless behind these works, and in support of them in the open, can be assembled a force of sufficient strength to prevent an investment, or to attack the investing armies, and at the same time to hold the front against them in the field. It is estimated that 150,000 men might hold the whole of the Canada, East and West, against twice that number of the enemy. If we are to judge by what has passed, it is not probable the United States will be inclined or able for such an effort. Quebec might be held with 10,000 men against all comers. From 25,000 to 30,000 men would make Montreal safe. Kingston would require 20,000 men, and Ottawa would need 2000. The greater part, if not all of them, might be composed of militia, and volunteers trained to gunnery and the use of small arms. For the protection of the open country, and to meet the enemy in the field, an army of from 25,000 to 35,000 men would be needed from Lake Ontario to Quebec. The western district on Lake Erie could not be protected by less than 60,000 men.

Thus, in case of a great invasion from the United States, Canada, with any assistance Great Britain could afford her, must have 150,000 men ready for action. What prospect there is of this, may best be learned from a consideration, not so much of the resources of Canada, as of the willingness of the people to use them."

The author is alone responsible for the following rather amusing anecdote.

"Formerly flint pistols were served out to the frontier patrols, but of course percussion locks have, for many years, been given to all those employed in the service of the Crown in a military capacity. Some worthy official at home, however, still continues to send out barrels of flints with laudable punctuality, as he has not been relieved by superior order from the necessity of keeping up the supply of these articles. We have all heard of the forethought evinced by the home authorities, when they sent out water-tanks for our lake flotilla, forgetting that they were borne on an element quite fit for drinking. But I heard in the citadel of a still more remarkable instance of thoughtfulness.

"A ship arrived at Quebec some time ago with an enormous spar reaching from her bowsprit to her taffrail consigned to the storekeeper. It had been the plague of the ship's company, it had been in everybody's way, and had nearly caused the loss of the vessel in some gales of wind. The whole resources of the quarter-master-general's department were taxed to get it safely on shore, and transport it to the heights. And what was it? A flag-staff for the citadel. And what was it made of? A stout Canadian pine, which had probably been sent from the St. Lawrence in a timber ship to the government officials at home; who, having duly shaped and pruned sent it to the land of its birth at some considerable expense to John Bull."

THOREAU.—Cape Cod, 12mo pp. 252; Boston 1865. Ticknor and Fields.

A charming volume, well written, unpretending and replete with a pleasant though by no means shallow thoughtfulness. For those who do not know exactly where to find Cape Cod we give the rather humorous topography of the place as set forth by the author in the first page. "Cape Cod is the bared and bended arm of Massachusetts; the shoulder is at Buzzard's Bay; the elbow or crazy bone at Cape Malabar; the wrist at Truro; and the sandy fist at Provincetown, behind which the State stands on her guard, with her back to the Green Mountains, and her feet planted on the floor of the Ocean like an athlete protecting her Bay,—boxing with north-east storms, and ever and anon, bearing up her Atlantic adversary from the lap of the earth—eager to throw forward her other fist, which keeps guard the while upon her breast at Cape Ann."

MARCH.—Method of Philological study of the English Language;

By Francis A. March, Professor in Lafayette College, Pennsylvania; 12mo., 118 p. New York, Harper; (Montreal, Dawson).

HOOVER.—Mineralogy and Geology; By Washington Hooker, M. D., being the third part of Science for the School and Family; 8vo., 360 p. New York, Harper; (Montreal, Dawson).

This work is ornamented with nearly 200 engravings and brings the subject up to date; in this respect, however, much of what it teaches may have to be forgotten to make room for more recent discoveries upsetting the whole of former theories. Without wishing to find fault with such books, nor with the teaching of such branches as these in our academies, we must say that great care ought to be taken to confine the teaching to facts and theories which are generally admitted in the present state of science. Even of these a sufficient number will soon be dropped.

BURTON.—The Culture of the Observing Faculties in the Family and the School, or Things about Home, and how to make them instructive to the young; By Warren Burton; 12mo., 170 p. New York, Harper.

A very long title for a very small book; but a very useful volume for its size. We shall give extracts in our next.

MODERN School Geography and Atlas, prepared for the use of Schools in the British Provinces. Montreal and Toronto, Campbell.

This new school geography and atlas, which, we believe, is printed in New York, is of a somewhat smaller size than Lovell's. It contains 19 maps and 76 pages of text in small quarto. It is well got up, and the maps are remarkably clean and well printed; the reading matter is substantial, methodically arranged and remarkable for its conciseness; but perhaps it is a little too dry. Picturesque and interesting details, contribute to awaken the curiosity of pupils and to help their memory by making a stronger impression. It is on this account that Mr. Holmes' French Geography, although unaccompanied with maps or engravings of any kind, is still so popular with teachers and pupils in Lower Canada.

CAMERON.—Lecture delivered by the Hon. Malcolm Cameron to the Young Men's Mutual Improvement Association. Quebec 1865, 8vo 36 p. Desbarats.

In this lecture the Hon. Malcolm Cameron has related his travels on the American coast of the Pacific. The following description of New Westminster the capital of British Columbia, written by one who is so well known in Canada, will be read with interest.

"From Vancouver I took the Hudson Bay Company steamer "Enterprise" to New Westminster, the capital of British Columbia, 63 miles from the island; the greater part of the distance, say, 36 miles we were among the islands, safe as a river, the main crossing being 11 miles, to the mouth of the Fraser river, about 6 miles north of the 49th parallel of latitude, the Boundary line between British Columbia and the United States. The entrance to the river is low and grassy and has been misrepresented by local jealousy; it only requires a light-ship to be made perfectly accessible at all times to vessels of 18 to 20 feet draft. Her Majesty's men-of-war have gone up and thus settled the question beyond dispute, for in spite of repeated assertions of dangerous bars, and shallows and what not, *the fact is proved* that the mouth of the Fraser is safe and commodious, and the river perfectly navigable to Fort Langley far above New Westminster.

"From the mouth of the river to the capital is 12 miles, filled with islands of the richest deposit, only requiring draining and dyking to become the best farming land on the Pacific, they are of immense value and capable of sustaining 20,000 people.

"The site of New Westminster on the left bank of the river is very fine: rising almost too abruptly from the water to a height of about 200 feet; several streets are well graded, the mint is a neat building, the general hospital is a most creditable undertaking, the Episcopal church is a perfect gem—but the goal is a miserable hovel. "The Camp" was the residence of Colonel Moodie, Royal Engineers, and the barracks of the soldiers of his corps. And here I must not omit to say how much the colony owes to that excellent officer and most sincere Christian, and his amiable and pious wife; the morals and character of New Westminster stand far above any other place on the Pacific, and I could attribute this very much to the purity, liberality and Catholicity of his religion, which so much aided and strengthened the hands of Mr. White, Methodist, and Mr. Jamieson, the Free Church, as well as the Episcopal ministers, in all their efforts for the people's good. His liberality extended to aiding the Abbé Fouquet, Roman Catholic Missionary, in his extraordinary efforts for the

Christianizing of the Indians, four thousand of whom he vaccinated in his travels—saving thousands of lives.

"The lands about New Westminster are covered with the most enormous growth of Douglas pine trees 300 feet long, 10 to 15 feet through, 200 feet without a limb, they are now unsaleable and to clear the land would cost \$100 an acre. The country is all rough and by no means generally good for farming, but at present prices money is made by farming. However, with her inexhaustible resources of coal, iron, copper, silver, and gold, and her position as the terminus of the road from the Atlantic, I feel assured that New Westminster will be one of the finest towns on the continent.

"One of the chief products of the colony is in such abundance that my word has been doubted in reference to it, I mean salmon. In crossing the Colquhalla the horses feet struck the fish, and a mill stopped because the mill race was filled with them. The Hudson Bay Company used to export thousands of barrels till the gold fever raised the price of labor too high.

"The elevation of the city gives magnificent scenery. Views of Mount Baker 10,000 feet high, Gulf of Georgia, bend of the Fraser river, and the Mountains of Washington Territory covered with everlasting snow, give it a picturesque beauty and interest never to be forgotten."

MONTHLY SUMMARY.

EDUCATIONAL INTELLIGENCE.

—Rev. Mr. Beausang is at present in Montreal collecting subscriptions for the Dublin University. He has been very successful, it is said, at Quebec and in this city, having obtained among other subscriptions, \$1000 from the Seminary of St. Sulpice, and \$100 from Hon. A. Quesnel.

—The Laval University is about to establish a botanic garden, a lot of land situated on the Grande-Allée Road, in the environs of Quebec, having been secured for the purpose at a cost of \$6,250.

—The Laval University met with a serious accident on the night of the 24th March last, the wing of the Seminary situated nearest to the University building having been destroyed by fire. Some of the students who slept in this edifice were in great danger of losing their lives, and their escape is due to the activity and presence of mind of two of their number, Messrs. Decelles and Humphrey who improvised a means of retreat from the impending peril. The library of the students in divinity, containing 3000 volumes besides precious manuscripts, was lost. This is the third conflagration which has overtaken this institution, the first having taken place in 1701, and the second in 1705.

FINE ARTS INTELLIGENCE.

—The exhibition, of the Art Association of Montreal came off very successfully at the Mechanics' Institute. This exhibition, the third held by the Association, was opened on the 27th February by the Lord Bishop of Montreal and continued during several weeks.

—It is intended to render more complete the collection of paintings to be hung in the splendid gallery attached to the new Parliament building at Ottawa. Mr. Hamel has accordingly just executed the orders he had received from Parliament for portraits of Champlain, Charlevoix, Wolfe, Montcalm, Chevalier de Lévis, General Murray, and Messrs Neilson, Bourdages and Andrew Stuart; and he is now engaged on a full length portrait of Chancellor Blake.

SCIENTIFIC INTELLIGENCE.

—A modern writer on nature and art has spoken of the gradual, but sure decrease of body in the Alps mountains; his thoughts and observations the traveller may easily verify. It is written of men that they do all fade as the leaf. The hills, also, are wasting and wearing away, and slowly running down to the sea. The valley is a witness to the mountain's weakness. The glacier pulverizes the rock, and every mountain streamlet carries down its contributions to the plain, perhaps each drop a sand-grain. The waste of the mountains is forming new earth. Nearly every Alpine lake is proof of this. The Rhine deposits in Lake Constance have formed a large delta. What was formerly a large bay in Lake Lucerne is now a marsh, and in another part the rocks that one little brook has brought down have nearly stopped navigation. The earth that the Rhone

has gathered has shortened the southern horn of Lake Geneva nine miles. By observing and weighing the amount of sediment in a certain quantity of water taken from the glacier streamlet, the number of tons which Mont Blanc annually loses was at once estimated. It thus becomes a matter almost within the range of mathematical calculation to compute the number of years when the mountains shall have yielded their strength, and when the "hills shall have been made low."—*ib.*

—By means of a photographic process, copies of drawings can be made rapidly and cheaply of the same size as the originals. The original drawing is in no way injured by the process, and the copy is produced by simple superposition over the chemically prepared paper, and is a positive copy direct without the intervention of a negative.—*J. of Arts and Manufactures, U. P.*

—The *Cernean*, a paper published in Port Louis, Mauritius, contains the following extraordinary announcement according to *Galignani*:—"M. Chambay has succeeded in fixing the colours of the objects. The picture is taken instantaneously, as in other kinds of photography. The modelling and relief are marvellous: the blood appears to circulate beneath the skin; the colour is fixed; and the portraits, which present a surprising resemblance are equal to the finest pastels, miniature, or water-colour drawings. M. Chambay is about to remove to Paris."—*ib.*

—Recently a pneumatic dispatch apparatus was tried in Manchester in connection with telegraphy. Owing to the increase of their business in Manchester, the Electric and International Telegraph Company has lately taken extensive premises in York street, and opened a central station there. In order to facilitate the rapid dispatch of messages from the branch offices at Ducie Buildings (Royal Exchange) and No. 1 Mosley street, it has been deemed advisable to connect these offices with the central station by means of the pneumatic system, the same as is adopted by the company in London and Liverpool. Between the branch offices above mentioned and the central station leaden pipes with an inside diameter of 1½ inches have been laid down under the streets. The leaden pipes are made perfectly air tight, and are inclosed in 2 inch iron pipes to protect them from being damaged. At the central station there is fixed in the basement a small high-pressure beam engine, and connected with it a double-action air pump, 17 inches in diameter and 15 inch stroke. The pump is continually at work exhausting the air from a cylinder 8 feet long and 4 feet in diameter, which is styled the vacuum cylinder. The pipes which pass under the streets from the branch offices are terminated in the instrument room on the top floor of the building, and the pipes from the vacuum cylinder are also carried to the same place, and they can be put in connection by simply opening a valve. The carriers which travel through the pipes are made of gutta percha covered with felt. They are about five inches long and of a diameter nearly equal to that of the pipe. They are hollow inside for the purpose of containing the messages. Electric bells are employed to give the necessary signals for the working of the pipes.—When the officials at the Ducie Buildings office wish to send a "carrier" they place one in the mouth of the pipe and signal the central station by ringing its bell. The clerk in attendance at the latter place by moving a small lever, puts the pipe in communication with the vacuum cylinder. The air in the pipe then rushes into the vacuum cylinder, and the "carrier", having the ordinary atmospheric pressure behind it, is propelled through at a speed of from 35 to 40 miles an hour. On the arrival of the "carrier" at the central station it strikes against a spring buffer, which, by a simple self-acting contrivance, cuts off the communication between the pipe and vacuum cylinder, and the carrier falls from the valve on to a counter prepared to receive it. To send a "carrier" from the Mosley street office the action is precisely the same. By using a second chamber, and compressing air into it, a force is obtained for blowing the "carriers" from the central station to the branch offices, so that the pipes can be made available for carrying in both directions. The branch office in Mosley street is about 320 yards from the central office, and the distance of the Ducie Buildings from the branch office, is 510 yards. The time occupied by a "carrier" in traversing the shorter distance is 22 seconds.—*Engineer.*

—A singular circumstance was communicated to the French Photographic Society at its last sitting, by Mr. Placet. The magnesium light is so powerful, that when placed at a short distance from the object-glass, it will melt its surface. An object-glass spoilt in this way was produced by him at that sitting. Photographers had better take the hint, and not bring the light too near the apparatus.—*ib.*

—According to a report to the Italian Government the coral fisheries, which are a great resource for the poorer classes, employ 460 boats, manned by about 4,000 men. The fishing implements, pay of the men, board of the crew, etc., absorb annually about 6,000,000 francs, distributed among more than 6000 persons of different professions. About 160 tons of coral are annually introduced into the kingdom of Italy. The articles made of it and exported are to the value of from 12,000,000 to 16,000,000 francs yearly, principally sent to Asia, the interior of Africa and America.

MISCELLANEOUS INTELLIGENCE.

—The project of the Confederation of the British North American Provinces has been approved in the Legislative Council by a vote of 45 against 15, and in the Legislative Assembly by a vote of 91 against 33. The vote among the Lower Canada members was as follows; Yeas 37, nays 25,—total 62; among Roman Catholics, yeas 28, nays 24,—total 52; French Canadians, 27 against 22. As however several counties represented in Parliament by English and Protestant gentlemen are to be classed as French and Roman Catholic, the last figures may not give an exact idea of the true state of the interested parties in that respect.

The Assembly was occupied during seven weeks in discussing the subject, and the debate was then only terminated by the Government moving the *previous question*, which was done when news of the elections in New Brunswick was received, Hon John. A. McDonald announcing that it was the intention of the Government to ask for the necessary supplies to defray the expenses of the civil service and provide for the defences of the country, and to prorogue Parliament as soon after as possible and call another session during summer. He added that several members of the administration would then immediately leave for England in order to confer with the Imperial Government on the subject of the proposed confederation. Messrs. Cartier and Galt accordingly took their departure for England on the 12th instant, Messrs. McDonald and Brown following on the 19th. The Hon. T. D'Arcy McGee who goes to the Dublin Exhibition as Canadian commissioner, accompanies the last named gentlemen.

The sums asked for—including two million dollars for military and militia expenses—were granted by very large majorities. Hon. Mr. Galt, Minister of Finance, in the Assembly, and Hon. Mr. Ross, in the Legislative Council, pointed to the necessity which was felt for a definite understanding with England in regard to our defences, declaring that Canada was willing to fulfil its part of the duty, which should be in proportion to the limited resources of the colony.

—Mr. Dion, photographic artist of this city, is the inventor of a fire alarm, remarkable alike for its simplicity and the great ingenuity displayed in its construction. It occupies very little space, being in the form of a small box, and can be placed in almost any situation. On a rise taking place in the temperature of the room in which it may be, it will at once give the alarm by ringing a bell which can be hung anywhere at pleasure. The inventor has applied for a patent.

—The New Atlantic cable, which is now in process of manufacture in England, is to be about two thousand five hundred miles long, allowing four or five hundred miles for all contingencies. Its core, through which the electricity passes, is to be composed of seven strands of the best copper wire, making together over seventeen thousand miles of copper wire; this is to be enclosed in eight coats or layers of insulating material; then follow ten coatings of jute, and ten iron wires. Each wire is covered separately with five twists or strands of yarn.

About eight hundred miles of this cable is now ready, and is being placed on board of the Great Eastern, and will fill one of the three large tanks prepared to receive it. It is intended that in June next the whole two thousand five hundred miles of the cable will be ready to pay out from the Great Eastern, and be sunk "down among the dead men," who, for once, will have their connection with the living world of humanity resumed wherever their bones come into contact with the cable.—*Hunt's Merchants' Magazine*.

NECROLOGICAL INTELLIGENCE.

—Among the many dark deeds that overshadow the page of history, the assassination of President Lincoln must ever occupy a conspicuous place—a hideous spectre pointing an era in the book of time. The fearful tragedy enacted on the evening of Good Friday in the theatre at Washington spread a feeling of horror and dismay wherever the appalling news was received, business was generally suspended and flags were hoisted at half mast on public and other buildings throughout the Provinces. Abraham Lincoln, whose straightforwardness and characteristic simplicity of manner were popularly recognised in the nickname "Honest Old Abe," was a native of Kentucky but had removed to the West with his family at an early age. He was admitted to the Bar and practised law very successfully during many years at Springfield, Ill.; and having been thrice elected to the Legislature of his adopted State, and returned to the national Congress as representative, he was at length chosen to the highest place in the gift of his fellow countrymen in 1860, and had just been inaugurated as President for a second term of office when the hand of the assassin cut short his earthly career. Mr. Lincoln was about 56 years of age at the time of his death.

—The death of Cardinal Wiseman created a lively sensation in England recently, and a vast multitude assembled to witness his obsequies, which were performed with the most imposing solemnity. Many of the nobility were present, as were also the ambassadors of France, Austria, and Greece, together with other members of the diplomatic corps and illustrious persons. The funeral service was performed by the Bishop of Troy in presence of the Archbishop of Dublin and eleven bishops. Upwards of 30,000 persons were admitted and passed in procession through the church during the ceremony. Cardinal (Nicholas) Wiseman was born at Seville in Spain, in

1802, and was the son of James Wiseman, a merchant of Waterford, and Ann Strange who died in 1851. His family claims to be of high antiquity in England, and includes a baronetcy conferred by Charles I.

—The late Mr. Justice Gale was born at St. Augustine, East Florida, in 1783. He was educated at Quebec while his father was Secretary, and came to study law at Montreal under the late Chief Justice Sewell, in 1802, having the late Chief Justice Rolland and, we believe, Mr. Papineau as fellow students. Mr. Gale was admitted to the bar in 1808, and ere long secured a large practice. In 1815 he was appointed a magistrate in the Indian territories, and accompanied Lord Selkirk when he went to the North-west. Later, when Lord Dalhousie was attacked for his Canadian administration, he went home as bearer of memorials from the English-speaking Lower Canadians in the Townships and elsewhere, defending his Lordship's conduct. In 1829, he became chairman of the Quarter Sessions, and in 1834 was raised to the bench to replace Mr. Justice Uniacke, who preferred to resign the seat on the Bench to which he had just been appointed rather than come back to Montreal during the cholera, then raging here. Judge Gale retired from the Bench in 1849, forced into retirement by continued ill-health and the gradual coming on of the infirmities of old age. He had married in 1839, a Miss Hawley, of St. Armand West, by whom he leaves three daughters. Mrs. Gale herself died several years ago. Born of parents who had both suffered for their loyal adherence to the British Crown during the American revolution, and educated in their views, Mr. Gale was, as long as he meddled in politics a staunch conservative and defender of British connection and British supremacy.

Both as lawyer and judge he won the respect of his *confreres* alike by his ability and learning. Of late years his heart has been deeply interested in the freedom of the slave. He could not speak with patience of any compromise with slavery, and waxed indignant in denunciation of all who in any way aided, abetted, or even countenanced it. When the Anderson case was before the Upper Canada Courts he was one of the most active among those who aroused agitation here. When the Prince of Wales visited the country he got up a congratulatory address from the colored people of Canada, which, however, was not received, as the Prince was desired by the Duke of Newcastle not to recognize differences of race and creed wherever it could be helped. He was a man of high principle, and ever bore an unblemished moral character. He was a scrupulously just man, most methodical and punctual in business matters. There were also in his writings great care and precision and clearness of language. In his letters, too, and even in signing his name, the same trait was observable. He often used to condemn the stupid custom of men who signed their names with a flourish, yet so illegibly that no one could read, but only guess at, the word intended. He was not ostentatious of his charities, yet we know they were not lacking. Some years ago he made a gift of land to Bishops' College, Lennoxville, and during the last month of his life, when age and illness were day by day wearing him out, he found relief for his own distresses in aiding to relieve those of the needy and afflicted.

With him has passed away one more of the links which have bound the bustling men of middle age to-day with a generation of which the youth of to-day know almost nothing, of men more proud and more precise in their manners than we are, but also of such rectitude and sense of honour, that we feel deeply the loss of the influence of their example. A loyal subject, a learned and upright judge, a kind, true, steadfast friend has been lost to the community in Judge Gale.—*Montreal Gazette*.

STATISTICAL INTELLIGENCE.

—The Indians dwelling within the United States are fast disappearing from among men. In 1840 there were 400,000; in 1850, 350,000, and the census of 1860 shows only 295,400. This is a decrease of 50,000 every five years. The proportion of decrease is steadily augmented as the path of empire takes its way westward. How many years will elapse, at this rate, before the Indian savage will exist only in the history of Schoolcraft, the prose fiction of Cooper, and the poetry of Longfellow? The civilized Indian flourishes better than the wild one, for in the State of New-York (the last census says) we have 3785 aborigines, whereas in Colorado only 6000 were left in 1860.

The principal Indian populations are distributed as follows: West Arkansas, 65,680; New-Mexico Territory, 65,100; Dakota Territory, 30,664; Washington Territory, 31,000; Utah Territory, 20,000; Minnesota 17,900; California, 13,660; Kansas, 8180; Nevada Territory, 7520; Oregon, 7000.—*New York Teacher*.

—Ten years ago, the whole amount of business done by the wholesale newsagents did not probably exceed in amount the sum of \$750,000 yearly. Now the cash receipts of the American News Company of New York for the sale of newspapers, magazines, books and stationery, for the eleven months ending with the thirty-first of December last, have reached the sum of \$2,226,372.83. We learn from the office of that company, that probably forty millions of newspapers were handled within that time by persons in the employ of the company, of whom seventy were constantly occupied in getting them in, charging, distributing and shipping them. For wrapping paper and twine, with which to pack this enormous mass, the company paid twelve thousand dollars.—*Hunt's Merchants' Magazine*.

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