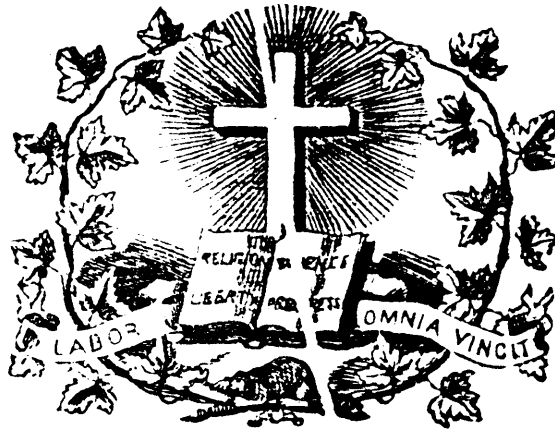


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On Teaching Natural Science in Schools.

By J. M. Wilson, M. A., F. G. S., F. R. A. S.

(*Continued from our last.*)

The art of the schoolmaster is a maieutic art now as it was in the days of Socrates; it is still his business to make his boys bring their notions to the light of day, to the test of facts; constantly to require verification; but as often as possible to give them the pleasure of discovery. He may guide them to the treasure, but let him unselfishly give them the delight of at least thinking they have found it. This is the charm that tempts them on, and is the highest reward they can win. At first the seeming progress is slow, but it soon accelerates, and the avidity for learning soon compensates for the apparent poverty of the results at first.

I insist upon this point because I am convinced that it is very important, and very likely to be overlooked: and as Botany seems the best subject for beginning to train boys in scientific methods, and as no English work (1) is thoroughly to be recommended as a guide to botanical teaching, I shall devote a brief paragraph or two to the illustration from Botany of what I hold to be the true method of *beginning* to teach science. It is a subject, however, for an essay of itself.

(1) Oliver's Botany is the nearest approach to a good text-book.

Suppose then your class of thirty or forty boys before you, of ages from thirteen to sixteen, as they sit at their first botanical lesson; some curious to know what is going to happen, some resigned to anything; some convinced that it is all a folly. You hand round to each boy several specimens, say of the Herb Robert; and taking one of the flowers, you ask one of them to describe the parts of it. "Some pink leaves" is the reply. "How many?" "Five." "Any other parts?" "Some little things inside." "Anything outside?" "Some green leaves." "How many?" "Five." "Very good. Now pull off the five green leaves outside, and lay them side by side; next pull off the five pink leaves, and lay them side by side; and now examine the little things inside. What do you find?" "A lot of little stalks or things." "Pull them off and count them:" Then show them the little dust-bags at the top, and finally the curiously constructed central column, and the carefully concealed seeds. By this time all are on the alert. Then we resume: the parts in that flower are, outer green envelope, inner coloured envelope, the little stalks with dust bags, and the central column with the seeds. Then you give them all wall-flowers: and they are to write down what they find: and you go round and see what they write down. Probably some one has found six "*storks*" inside of the wall-flower, and you make him write on the black-board for the benefit of the class the curious discovery, charging them all to note any such accidental varieties in future; and you make them very minutely notice all the structure of the central column. Then you give them all the common pelargonium and treat it similarly; and by the end of the hour they have learnt one great lesson, the existence of the four floral whorls, though they have yet not heard the name.

Next lesson-time they come in looking more in earnest, and you give them single stocks and white alyssum, which they discover to be wonderfully like the wall-flower; and you have a lot of flowers of vegetable marrow, some of which are being passed round while you draw two of them on the board. The difference is soon discovered; and you let them guess about the uses of the parts of the flower. The green outer leaves protect it in the bud; the central organ is for the seeds; but what is the use of the others? Then you relate stories of how it was found out what the use of the dust-bags is: how patient Germans lay in the sun all day to wait for the insects coming: and how the ex-

istence of a second rare specimen of some foreign tree was found out in Paris, by its long-widowed spouse in the Jardin des Plantes at last producing perfect seeds. A little talk about bees, and moths, and midges, and such creatures, finding out what they have seen, and your second lecture is over.

In the third lecture you take the garden geranium, and beg them to examine it very closely too see if it is symmetrical. Several will discover the unsymmetrical outer green leaves; one or two will discover the hollow back of the stem: then the pelargonium, and its more visible unsymmetry: then the common *tropæolum*; in each of which they find also the same parts, and count, and describe them: and lastly the *tropæolum Canariense*, with its grotesque irregularity; and they are startled to find that the curious-looking flower they know so well is constructed on the same type, and is called by the same name; and by the end of the lesson they have learned something of irregular flowers, as referred to regular types.—something of continuity in nature.

So in succession, I cannot give more detail, you lead them through flowers where the parts cohere, as in the *campanula*, through plants deficient or odd, through roses, and *mignonette*, and *honey-suckle*, and all the simple flowers you can find; till they thoroughly know the scheme on which a simple flower is made. Then you challenge them to a dandelion or daisy: and each has to write down his ideas. Your one or two geniuses will hit it: some will be all wrong, without a shadow of doubt; the majority fairly puzzled. You give them no hint of the solution, tell them to lay it aside; and you give them the little thrift, and challenge them to find its seeds, and how they are attached. This many will do, and pick out the little seed with its long thread of attachment, and then they will go back to their dandelions with the key to the structure; and find its seeds, too, and be charmed to discover the remains of its poor outer green envelope, and even its little dust-bags. How proud they are of the discovery! they think they have the key of knowledge now. And then you begin a little terminology,—calyx and sepals, corolla and petals, stamens and pollen, pistil and stigma, and so on: and test their recollection of the forms of all the flowers they have examined. Then you notice the spiral arrangement of leaves on a twig of oak, or thorn, or willow, and the internodes; and the over-lapping of the sepals of the rose and *Herb Robert*; the alternance of the parts; and finally they work out the idea, that the floral whorls grow on the stem, and are a sort of depressed spiral of leaves with the internodes suppressed. A few monstrosities and pictures are shewn, and the grand generalization is made; the pistils are re-examined with fresh interest to test the theory; and all their old knowledge is raked up once more. Then, too, the value of the theory is criticised; and a lesson of caution is learnt.

Then a step forward is made towards classification, by cohesion and adhesion of parts; and the floral schedule is worked; and so step by step to fruits, and leaves, and stems, and roots, and the wondrous modifications of parts for special uses, as in climbing plants; and the orchids, which are a grand puzzle till a series of pictures from Darwin step in to explain the use of the parts and plan of the flower. Then some chemistry of the plant is introduced with some experiments, and the functions of all the organs are discussed. And lastly, strict descriptive terms are given, and the rest of the course is occupied by the history and the systems of classification, with constant reference however to the other conceptions that the class has gained.

Such a method as this has many advantages. It is thoroughly scientific, however irregular it may seem, and a professor of Botany may smile or shed tears over it for anything I care; and the knowledge is gained on a sound basis of original observation. Whatever flower a boy sees after a few lessons, he looks at with interest, as modifying the view of flowers he has attained to. He is tempted by his discoveries; he is on the verge of the unknown, and perpetually transferring to the known: all that he sees finds a place in his theories, and in turn reacts upon them, for his theories are growing. He is fairly committed to the struggle in the vast field of observation, and he learns that the

test of a theory is its power of including facts. He learns that he must use his eyes, and his reason, and that then he is equipped with all that is necessary for discovering the truth. He learns that he is capable of judging of other people's views, and of forming an opinion of his own. He learns that nothing in the plant, however minute, is unimportant; that he must observe truthfully; that he owes only temporary allegiance to the doctrines of his master, and not a perpetual faith. No wonder that Botany, so taught, is interesting: no wonder that M. Demogeot, who visited some English schools last year at the request of the French Emperor, expressed himself to me as charmed with the vivacity and intelligence of the botanical class of one of my colleagues. (1)

Very possibly a master might make his boys get up a book on Botany, and learn it in the order in which it stands in the book,—cellules and parenchyme, protoplasm and chlorophyll, stems and medullary rays, petioles and phyllodes, rhizomes and bulbs, hairs and glands, endosme and exosme, secretions and excretions, and so on, and ultimately come to the flower and fruit; and possibly a boy of good digestion might survive it and pass a respectable examination in a year's time. But this is not the aim, and even if in this way a greater number of facts could be learned, it would be far inferior to the method of investigation. A master must never forget that his power of teaching facts and principles is far inferior to a willing pupil's power of learning and mastering them. He must inspire his boys, and rely on them; nor will he be disappointed. Those who have in them anything of the naturalist will collect and become acquainted with a large number of species, and follow out the study with care and accuracy; and the mass to whom an extensive knowledge of species is a very unimportant matter, but who can appreciate a sound method of investigation and proof, will have gained all that they can gain from botanical teaching. And it must be remembered by those who speak of teaching science, and yet have never tried it, that a method which would succeed with a few naturalists, might utterly fail with the mass.

There is a time in the growth of mind in which there is considerable activity and considerable power of accumulation, but little power of method. And to assist at this stage on rigorous definitions, on sternest formality, is to forget the indications given by nature alike in the growth of the individual and of the world. In a boy's mind is only the becoming twilight of science, which brightens out slowly, if at all, into the perfect day. A boy leaves the botanical class as a rustic leaves the militia after three months' drill. He has gained something, he is more awake, can listen and learn better, knows what he is about; in fact he has been drilled. Year after year, I have had new boys and old in my classes, and always have been able to notice that at first the new boys seemed to be at a positive disadvantage in competing with the old, although the object I was teaching had no reference to Botany.

(To be continued.)

Intellect in Agriculture.

If a man whose capital consists of the clothes on his back, \$5 in his pocket, and an axe over his right shoulder, undertakes to hew for himself a farm out of the primitive forest, he must, of course, devote some years to rugged manual labor, or he will fail of success. It is, indeed, possible that he should find others, even on the rude outposts of civilization, who will hire him to teach school, or serve as county clerk, or survey lands, or do something else of like nature; thus enabling him to do his chopping trees, and rolling logs, and breaking up his stumpy acres, by proxy; but the fair presumption is that he will have to chop and dig, and burn off and fence, and break up, by the use of his

(1) The spirit of this method is admirably illustrated in *Le Maôût's* "Leçons élémentaires de Botanique, fondées sur l'Analyse de 50 Plantes vulgaires."

own proper muscle; and he must be energetic and frugal, as well as fortunate, if he gets a comfortable house over his head, with forty arable acres about him, at the end of fifteen years' hard work. If he has brains and has been well educated, he may possibly shorten this ordeal to ten years; but should he begin by fancying hard work beneath him, or his abilities too great to be squandered in bushwhacking, he is very likely to come out at the little end of the horn, and straggling back to some popular settlement, more needy and seedy than when he set forth to wrest a farm from the wilderness, declare the pioneer's life one of such dreary, hopeless privation that no one who can read or cypher ought ever to attempt it.

A poor man, who undertakes to live by his wits on a farm that he has bought on credit, is not likely to achieve a brilliant success; but the farmer whose hand and brain work in concert will never find nor fancy his intellect or his education too good for his calling. He may very often discover that he wasted months of his school days in what was not adapted to his needs, and of little use in fighting one actual battle of life; but he will at the same time have ample reason to lament the meagreness and the deficiency of his knowledge.

I hold our average common schools defective, in that they fail to teach geology and chemistry, which in my view are the natural bases of a sound, practical knowledge of things—knowledge which the farmer, of all men, can least afford to miss. However it may be with others, he virtually needs to understand the character and constitution of the soil he must cultivate, the elements of which it is composed, and the laws which govern their relations to each other. Instruct him in the higher mathematics, if you will; in logic, in meteorology, in ever so many languages; but not till he shall have been thoroughly grounded in the sciences which unlock for him the arcana of Nature; for these are intimately related to all he must do, and devise, and direct, throughout the whole course, of his active career. Whatever he may learn or dispense with, a knowledge of these sciences is among the most urgent of his life-long needs.

Hence, I would suggest that a simple, lucid, lively, accurate digest of the leading principles and facts in geology and chemistry, and their application to the practical management of a farm, ought to constitute the reader of the highest class in every common school, especially in rural districts. Leave out details and recipes, with directions when to plant or sow, &c.; for these must vary with climate, circumstances, and the progress of knowledge; but let the body and bones, so to speak, of a primary agricultural education be taught in every school, in such terms and with such clearness as to commend them to the understanding of every pupil. I never yet visited a school in which something was not taught which might be omitted or postponed in favor of this.

Out of school and after school, let the young farmer delight in the literature illustrative of his calling—I mean the very best of it. Let him have few agricultural books; but let these treat of principles and laws rather than of methods and applications. Let him learn from these how to ascertain, by experiment, what are the actual and pressing needs of his soil, and he will readily determine by reflection and inquiry how those needs may be most readily and cheaply satisfied.

All the books in the world never of themselves made one good farmer; but, on the other hand, no man in this age can be a thoroughly good farmer without the knowledge which is more easily and rapidly acquired from books than otherwise. Books are no substitute for open-eyed observation and practical experience; but they enable one familiar with their contents to observe with an accuracy, and experiment with an intelligence, that is unattainable without them. The very farmer who tells you that he never opened a book which treats of Agriculture, and never wants to see one, will ask his neighbor how to grow or cure tobacco, or hops, or sorgho, or any crop with which he is yet unacquainted, when the chances are a hundred to one that this particular neighbor cannot advise him so well as the volume which embodies the experience of a thousand cultivators of this

very plant instead of barely one. A good book treating practically of Agriculture, or of some department therein, is simply a compendium of the experience of past ages, combined with such knowledge as the present generation have been enabled to add thereto. It may be faulty or defective on some points; it is not to be blindly confided in, nor slavishly followed—it is to be mastered, discussed, criticised, and followed; so far as its teachings coincide with the dictates of science, experience, and common sense. Its true office is suggestion; the good farmer will lean upon and trust it as an oracle only where his own proper knowledge proves entirely deficient.

By-and-by, it will be generally realized that few men live or have lived who cannot find scope and profitable employment for all their intellect on a two-hundred acre farm. And then the farmer will select the brightest of his sons to follow him in the management and cultivation of the paternal acres, leaving those of inferior capacity to seek fortune in pursuits for which a limited and special capacity will serve, if not suffice. And then we shall have an Agriculture worthy of our country and the age.—HORACE GREELY, (*N.-Y. Tribune*).

Prize Essay on Teaching Elementary Geography.

(Concluded.)

ENGLAND AND WALES.

Boundaries.—North by Scotland; east by the German Ocean; south by the English Channel; west by the Atlantic, St. George's Channel, and the Irish Sea.

Coast line 2000 miles. Greatest length from 300 to 420 miles. Greatest breadth 300 to 360 miles.

Capes.—Flamborough Head in Yorkshire; Spurn Head north of the Humber, South Foreland and Dungeness in Kent, Beech Head in Sussex. The Needles in the Isle of Wight; Lizard Point (the most southern), and Land's End (the most western) in Cornwall; St. David's Head in Wales.

Islands.—Isle of Man, Anglesea, Wight, Holyhead Lundy Island, the Channel Islands.

Wight, south of Hampshire, is about half the size of Dublin county. Ryde and Newport are its largest towns. The Queen has a favourite residence near Cowes, in the island, called Osborne House.

Anglesea is joined to the main land by two bridges. Holyhead is the port of embarkation for Ireland, and is only an island at high water.

The Channel Islands belong to Great Britain through the Norman Conquest, having belonged to William Duke of Normandy. These islands are much frequented by tourists from their mild climate and exemption from several taxes.

Isle of Man, about three-fourths of the size of Dublin county, has some lead mines and fisheries. Chief towns, Ramsay and Douglas. It too, enjoys peculiar privileges.

Mountains.—Pennine Range, Cambrian Range, containing Scafell, 3,166 feet high (the highest mountain in England) Cambrian Range to the west contains Snowdon (the highest in England and Wales).

Lakes.—Windermere, Derwent Water, and Bala Lake in Wales. The lakes of England are few and small. Their scenery, being situated among high hills, is very beautiful.

Rivers.—The Ouse, Thames, Severn Mersey, Dee. The largest is the Severn.

Climate.—The climate is moist, particularly on the west, but healthy. It is warmer west and south than east. Prevailing winds are west and south-west. East and north-east winds blow for some time in spring—these winds are cold and dry. It is warmer than the Continent of Europe in the same latitude.

Soil and Productions.—The soil is generally fertile. The grain crops are wheat in the east and south-east, barley in the centre, and oats in the north. Hops are grown in Kent.

Minerals.—Coal, iron, copper, lead and tin. England owes to the abundance of these minerals, more especially coal and iron, the position she holds as the richest country in the world. Coal abounds in the northern counties, Staffordshire and Wales. Copper and tin are found chiefly in Cornwall and Devon.

Manufactures.—Cotton, woollen, silk, metal, and earthenware manufactures. 40,000 ships and 300,000 sailors are employed in the commerce of England, besides foreign vessels.

Government.—A limited monarchy consisting of king or queen, lords and commons. The House of Commons consists of 658 members for the United Kingdom elected by the people. The House of Commons may be said to govern the kingdom—it alone has control of the finances.

People.—The people of England are chiefly descendants of Saxons, mixed with Danes and Normans. The Welsh are descended from the original inhabitants.

Religion.—Protestant Episcopacy is the established religion, but all denominations are tolerated. The Sovereign and Lord Chancellor must be protestant; other public offices are open to all. (?)

ENGLAND HAS 40 COUNTIES. (1)

Northern Counties.

1. Northumberland—In this county are the remains of an ancient Roman wall, partly built by Agricola A. D. 80. Chief towns—Newcastle, a seaport on the Tyne; extensive coal mines near. There is a double bridge over the Tyne, the upper arches of which are used for railway purposes. Berwick—Twelve miles from Berwick is Flodden Field, where the Scots, under James IV., were defeated in 1513.

2. Durham—Durham the chief town, has a fine cathedral and university. The Saxon monk, "The venerable Bede," was buried in this cathedral.

3. York—York is divided into three districts called Ridings. Chief towns—York, an ancient city, once the residence of the Roman Emperors. The cathedral is the finest specimen of Gothic architecture in the kingdom. West of York is Marston Moor where, in 1644, Charles I. was defeated by Cromwell. Sheffield, famous for cutlery and metallic manufactures. Leeds, the seat of the woollen manufactures. Hull, which ranks as a seaport next to London and Liverpool. Its trade is chiefly with the North Sea and Baltic ports. Scarborough, south-west of which is Kirkdale Cave, where bones of hyænas, tigers, rhinoceroses, &c., are found.

4. Derby—Derby, Chesterfield, Matlock, Buxton. Prince Charles advanced to Derby in 1745, before he was defeated at Culloden.

5. Stafford—Stafford, Lichfield, Burton-on-Trent, Newcastle-under-Lyne. Lichfield was the birth place of Dr. Johnson, born in 1709. Burton has large breweries—Part of Staffordshire is called "The Potteries."

6. Leicester—Leicester, Loughborough.

7. Nottingham—Nottingham, Newark. (2)

Six Counties in the Basin of the Wash.

8. Lincoln—Lincoln, Boston, Grantham. Lincoln was a Roman town at first, afterwards capital of Mercia, one of the Saxon Heptarchy. It is noted for a fine cathedral. Near Grantham, Isaac Newton was born.

9. Rutland—Oakham.

10. Northampton—Northampton, Peterborough. Twelve miles from Northampton, at Naseby, Cromwell defeated the army of Charles I. in 1645. Near Northampton was Fotheringay Castle, where Mary Queen of Scots was imprisoned, and beheaded in 1587.

11. Bedford—Bedford, Dunstable.

12. Huntingdon—Huntingdon, the birth place of Oliver Cromwell.

13. Cambridge—Cambridge, Ely. Cambridge has a great university with thirteen colleges and four halls, famous for the study of mathematics. Ely has a cathedral.

Three Counties in the East Plain.

14. Norfolk—Norwich, Yarmouth. Norwich has manufactures of woollens and mixed stuffs, introduced by the Flemings in the reign of Henry I and Elizabeth. Yarmouth is the chief seat of the herring fishery.

15. Suffolk—Ipswich, Lowestoft, the most westerly town of England. Bury St. Edmunds has the remains of a large abbey.

16. Essex—Chelmsford, Colchester. (3)

Seven Counties in the Basin of the Thames.

17. Middlesex—London, is ten miles long and seven broad, and includes besides the city, Westminster on the west, Marylebone, Finsbury, Tower-Hamlets on the north, Southwark and Lambeth on the south. In its wealth, trade, and commerce, it surpasses every city in the world. Among its public buildings are the Tower, Westminster Abbey, St. Paul's Cathedral, New Houses of Parliament, Royal Exchange. To the south-east a few miles is Sydenham, with its Crystal Palace. Along the Thames westwards, Chelsea with its hospital; Hampton Court, the residence, at one time, of Cardinal Wolsey; Chertsey, where Cesar crossed; and Runnymede, where Magna Charta was signed.

18. Hertford—Hertford, St. Albans, where two battles were fought during the "Wars of the Roses."

19. Buckingham—Buckingham, Eaton, famous for its great public school, founded by Henry VI.

20. Oxford—Oxford, remarkable for its university founded by Alfred the Great. It is the most richly endowed in the world. It has nineteen colleges and five halls: it possesses, too, the large Bodleian Library, and a fine museum.

21. Berkshire—Reading, Windsor, with its noble castle, the favourite residence of the English sovereigns.

22. Surrey—Guildford, Epsom, noted for its races; Croydon, which gave its name to a new vehicle.

23. Kent—Canterbury, the seat of the Primacy of England; Thomas-a-Becket was murdered here in 1170. Dover and Folkstone the chief route to France—distance from Dover to Calais 21 miles.

Six Counties on the English Channel.

24. Sussex—Lewes, Hastings, near which the Saxons, under Harold, were defeated by William I.; Brighton, a favourite watering place.

25. Hampshire—Winchester, once the capital of England, under the Saxon rule. King Alfred was buried here. Southampton the principal mail steam-packet station of England. The great military hospital, Netley, is near Southampton. Portsmouth, the principal naval station of Britain. In Hampshire is Aldershot, the military camp.

26. Wiltshire—Salisbury, near which is Stonehenge, the great temple of the Druids.

27. Dorsetshire—Dorchester, Poole, Weymouth.

28. Devon—Exeter on the Exe, an ancient city, with a magnificent cathedral. Plymouth, including Devonport, is the second naval station. The famous breakwater is at the mouth of the sound, and is near a mile long. The Eddystone lighthouse is to the south.

29. Cornwall—Bodmin, Truro, Falmouth. (4)

(1) Alfred is said to have divided England into shires, ruled by an Earl. The Normans called Earl *Comte*, from which come count and county.

(2) The last five counties are in the Humber basin.

(3) The three last counties are chiefly agricultural.

(4) These six counties are chiefly agricultural. Cornwall gives the title Duke of Cornwall to the eldest son of the King of England. The first Duke of Cornwall was the Black Prince, son of Edward III.

Seven Counties in the Basin of the Severn.

30. Somersetshire—Bath, famous for its medicinal and hot springs. Bristolwater, near which town, at Sedgemoor, the Duke of Monmouth was defeated in 1685. Near the mouth of the river Tone, in this county, is Athelney, where Alfred concealed himself from the Danes in 878.

31. Gloucester—Gloucester, fifteen miles from Gloucester is Berkeley Castle, where Edward II. was murdered in 1327.

"Hark! what shrieks from Berkeley towers do ring;
Shrieks of an agonizing king."

Bristol at one time ranked next to London. Sebastian Cabot, who discovered Newfoundland in 1492, (1497?) was a native of Bristol. Cheltenham is resorted to for its mineral waters.

32. Warwickshire—Warwick, containing the most perfect feudal castle in England. Coventry, noted for the manufacture of Ribbons. Birmingham, for metallic manufactures.

33. Worcestershire—Worcester famous for porcelain. Charles II. was defeated here by Cromwell, in 1651. Kidderminster, noted for carpets.

34. Shropshire—Shrewsbury where Hotspur was defeated and slain in 1403.

35. Herefordshire—Hereford, Leominster.

36. Monmouth—Monmouth, Chepstow.

Four Counties on the Irish Sea.

37. Cheshire—Chester which is enclosed by thick old walls.

38. Lancashire—Lancaster famous for its castle. Liverpool the greatest seaport in the empire next to London, celebrated for its extensive docks and great American trade. Manchester the second city in the kingdom for population, and the centre of the cotton trade.

39. Westmoreland—Appleby, Kendal.

40. Cumberland—Carlisle, with castle, and cathedral.

WALES CONTAINS TWELVE COUNTIES.

Its mountainous surface and wet climate is more fitted for pasturage than tillage. There are coal and iron mines in the south, and throughout the principality lead mines and slate quarries exist.

The Welsh are descended from the ancient Britons, who, aided by the mountain fastnesses, maintained their independence when the Saxons subdued England. Wales was conquered in 1282 by Edward I. The eldest son of the king or queen of England is called Prince of Wales. Their language is Celtic.

Six Counties of North Wales.

1. Flintshire—Flint, Mold, Holywell, in the mining districts.
2. Denbigh—Denbigh, Wrexham, with trade in flannels.
3. Carnarvon—Carnarvon, the first Prince of Wales, Edward II, was born in its castle.
4. Anglesea—Beaumaris, Holyhead.
5. Merioneth—Dolgelly, Bala.
6. Montgomery—Montgomery.

Six Counties in South Wales.

1. Cardigan—Cardigan.
2. Pembroke—Pembroke has a government dock.
3. Caermarthen—Caermarthen.
4. Glamorgan—Cardiff, Swansea, has an extensive trade in smelting copper. Merthyr Tydvil is now the largest town in Wales. It was a mere village in the last century. There are extensive iron works in its neighbourhood.
5. Brecknock—Brecknock.
6. Radnor—New Radnor.

The foreign possessions of Britain are equal in extent to one and a half times the size of Europe, or fifty times the size of Great Britain and Ireland.

The population subject to Great Britain equals 200 millions. (Ireland and Scotland should be gone through as England. Space does not permit this here.)

ASIA.

Area 17,000,000 squares miles. It is nearly five times the size of Europe, and contains one-third of the land on the earth's surface. It contains one-half of the human race.

REMARKS.—While Europe is compared to a body in which the limbs predominate, Africa to a body without members, Asia surpasses in the size of its body and extent of its members. Its coast line is 36,000 miles, but in proportion to its size it has but one mile to three that Europe has. Parts of Asia are 1,500 miles inland. The peninsulas south of Asia resemble those in the south of Europe; massive in the west, rich in the central peninsulas with an island at foot, and terminating in archipelagoes on the east.

NOTE.—The large print of Sullivan's geography may be used for seas, straits, boundaries, &c., &c.

REMARKS.—The Red Sea is saltier than the ocean, as it receives very little fresh water. It contains red coral and animalcules: hence its name. Its level is the same as the Mediterranean, but said to be higher when south-west winds blow. It is about 600 feet deep. It is divided into two gulfs on the north, Akaba and Suez. It was through the upper part of the latter that the Israelites passed of old,

Mountains.—A line drawn from the north of Persia to Behring's Strait will leave all the mountains of Asia south of it. Volcanoes are numerous on the east of Asia, chiefly on the islands. There are two volcanoes in the Thian Shan mountains, more distant from the sea than any others in the world.

Climate.—Most of Asia is in the north temperate zone. The portion of it in the Frigid Zone is intensely cold during the long winter of ten months: but the short summer is warm, owing to the length of time the sun remains above the horizon, without setting; the heat thereby accumulating. The climate of Southern Asia varies. In the West it is like Southern Europe; in Arabia and Persia it is very hot and almost without rain, except in the mountainous district, in Hindostan and further India, much moister. These last countries have two seasons, the wet and the dry; the wet corresponds to summer and the dry to winter. In the wet season, the sun is north of the equator, and a moist south-west wind blows from the ocean; in the dry season the sun is south of the equator, and a dry overland wind blows from the north-east.

Productions.—Most of Northern Asia is outside the limit of the growth of trees and is unfit for cultivation. Middle Asia is either desert or pasture land; the eastern slope however is fertile and cultivated. Southern Asia is varied. India is most fertile: rice is the chief grain; ginger, pepper, sugar-cane, cinnamon, cotton, cocoa-nut and other palms.

Minerals.—Coal is found in India and other parts. Gold in the Ural mountains, iron in most states, and tin south-east.

Animals.—In the north the bear, wolf, and fur-bearing animals. The centre is the native land of the horse probably: here also is the yak, a species of cow with long hair, camel, musk-deer. In the south-west the lion, tiger, hyæna, jackal, (which acts a scavenger in the streets of Calcutta at night), elephant, rhinoceros, crocodile, and the cobra snake; the peacock is a native of India.

Almost all the people of Asia are idolaters, except in the west, where Mahomedanism prevails.

AFRICA.

Three times the size of Europe. One-fifth of the land on the earth's surface.

Follow the large print in Sullivan's Geography.

Climate.—Three-fourths of Africa lie in the torrid zone, and as it has few elevations of considerable height, and water not abundant, it is hot and dry to a greater extent than the other continents. There are but two seasons, the dry and the rainy. Parching winds blow from the Sahara.

Productions.—In Northern Africa wheat, dourra, oranges, olives; the cotton plant in the north-east.

Middle Africa,—palm oil, maize, rice, the baobab or monkey bread tree, sometimes thirty feet in diameter, and regarded by Humboldt as the oldest specimen of organic remains in our planet. The east of Africa is the native region of the coffee plant.

Animals—Monkeys north-west; chimpanzee and gorilla in the west; baboons south; the lion leopard, hyena, jackal, elephant, rhinoceros, hippopotamus from the middle to the south; the camel in the north; crocodile in the tropical rivers; the ostrich in the desert. The locusts and white ants are destructive insects.

People—Estimated at 100 millions. The Caucasian race prevails in the north; the Negro in the middle; in the south are Hottentots and Kaffras.

The great majority of Africans are rude idolaters. Mahomedanism prevails in the north.

AMERICA.

Follow large print in Sullivan's geography.

Climate—The New World is more humid within the tropics than the Old World, but drier and colder in the more northern latitudes. The tropical regions are subject to violent hurricanes. In the same regions, heavy rains fall on the east coast, the winds constantly blowing from the east: while on the west and on the table lands rain falls sparingly, and in parts not at all. Outside the tropics the west coasts are wet.

The currents from the Arctic Ocean, bringing with them masses of ice, render the north-east coast the coldest in the world in the same latitude. Labrador is colder than Lapland, although in the latitude of Britain.

Productions—We have derived from America maize, tobacco, the potato from the Andes (some say from Mexico), Peruvian bark, useful as a medicine; cactus plants of Mexico, sugar maple, and others peculiar to America. We now get the chief supply of cotton from America, and large quantities of coffee, sugar and breadstuffs.

Animals—Wolf, bear, rein-deer, elk, wild goat and wild sheep of the Rocky Mountains; opossum and racoon. In South America monkeys with prehensile tails, tapir, sloth, armadillo, the lama and alpaca in the Andes, formerly the only beasts of burden. The birds are the condor, humming birds in the warm regions, and the turkey a native of the United States.

People—The natives were called Indians by mistake. Three-fifths of the population are of European origin, 12 millions are Indians, and 10 millions Negroes, introduced from Africa as slaves.

OCEANIA.

Follow Sullivan's geography, large print.

Remarks—New Zealand islands are near the antipodes of Great Britain. The north is the warmest and the south the coldest point in all countries south of the equator. The hot winds blow from the north and the cold winds from the south. June is mid-winter in Australia and adjacent countries, and January mid-summer. The compass needle points to the south in the Southern Ocean.

The climate of Australia is various. Years of drought are followed by years of flood. Wool, tallow, and gold are the chief exports. Among the trees of Australia is one without leaves; another has grass-like leaves. The natives are the lowest in the scale of humanity.

(Written for *The Journal of Education*.)

Autumn Winds.

By MRS. LEPROHON.

"Oh! Autumn winds, what means this plaintive wailing
Around the quiet homestead where we dwell?
Whence come, ye, say, and what the story mournful
That your wierd voices ever seek to tell—
Whispering or clamoring, 'neath the casements,
Rising in shriek or dying off in moan,
But ever breathing menace, fear, or anguish,
In every thrilling and unearthly tone?"

"We come from far off and from storm-tossed oceans
Where vessels bravely battle with fierce gale,
Mere playthings of our stormy, restless power,
We rend them quickly, shuddering mast and sail,
And with their stalwart, gallant crews we hurl them
Amid the hungry waves that for them wait,—
Nor leave one floating spar nor fragile taffrail
To tell unto the world their dreary fate."

"But still, ye desolating winds of Autumn,
He, who holds you in hollow of His hand,
Can stay your onward course of reckless fury,
Your demon wrath, or eyrie sport command,
Changing your wildest blast to zephyr gentle
As rocks the rose in summer evenings still,
Calming the ocean, and yourselves enchaining
By simple fiat of Almighty will."

"We've been too in the close and crowded city,
Where want is often forced to herd with sin;
And our cold breath has pierced through without pity,
Bare, ruined hovel, and worn garments, thin;
Through narrow chink and broken window pouring
Draughts rife with fever and with deadly chill,
Choosing our victims mid old age and childhood,
Or tender, fragile infancy at will."

"Oh! Autumn blasts! He, who doth temper,
The searching wind unto the shorn lamb,
To those poor shiv'ring victims, too, can render
Thy keenest, sharpest blasts, both mild and calm:
Rave on—rave on, around our happy homestead,
Upon this dark and wild November night,
Ye do but work out your God-given mission,
Mere humble creatures of our Father's might."

"But hearken, we come too from graveyards lonely—
From mocking revels held mid tomb-stones tall,
Fearing the withered leaves from off the branches,
The clinging ivy from the time-stained wall—
Uprooting—blighting, every tiny leaflet,
That hid the grave's bleak nakedness from sight,
Driving the leaves in hideous, death-like dances,
Around the lowly mounds—the grave stones white."

"And, what of that, ye cruel winds of Autumn?
Spring will return again with hope and mirth,
Clothing with tender green the budding branches,
Decking with snow drops, violets, the Earth:
And, oh, sweet hope, sublime and most consoling,
The sacred dust within those graves shall rise,
In God's good time, to reign on thrones of glory,
With Him beyond the cloudless, golden skies."

Christmas Carol.

By ELIZA ALLEN STARR.

Have you heard the wondrous story,
Bethlehem's story, sweet and old,
Of an Infant's raying glory,
From a manger bare and cold?

Bleak the stable, cold the manger,
But the "Word made flesh" was seen
By the shepherds, by the Magi,
Radiant, lovely and serene.

Icy winds of bleak December
Shook the stable, rude and wirth;
But the Angels well remember
Where their King, the Christ was born;

Well remember how His Mother,
Mary, Virgin Mother blessed,
With a worship like no other
Mother, her own babe caressed.

Mother's love with adoration,
Tender, rapturous, profound—
He had come, the world's salvation,
And her arms her God surround!

We would hasten with the shepherds
Through the midnight to adore,
Join the Magi's band intrepid,
Incense, myrrh, and gold in store.

Never can a gift too costly
Touch the manger's humble shrine;
Never can a gift too lowly
Jesus, touch that throne of Thine.

On the straw, which made thy pillow,
Poverty contented lies;
While our pride, like some spent billow,
Breaks against that crib, and dies.

Infant Jesus! Bethlehem's Wonder!
Mary's Babe! My God! My All!
By thy manger, can no wanderer
Vainly on Thy mercy call.

Civil Engineering at the Time of Christ.

Extensive surveys of the Island of Britain were made by the Roman Agrimensores (county surveyors), who availed themselves of the ancient Druid barrows of Wiltshire, and other artificial structures erected before the Roman conquests as points to and from which to draw their base lines. Mr. Blake announces this curious fact in his paper on the Geometric Use of Ancient Mounds, read before the London Antiquarian Society, and gives the proofs of his assertion in his edition of Antonine Itineraries prepared under the direction of the Master of the Rolls.

The Roman genius for construction was the grandest the world has seen. The traveller who visits the cathedral faues of York and Bourges, Burgos and Seville, Cologne and Milan, the castles of Windsor and Heidelberg, and St. Elmo, the temples at Paestum, at Athens, at Baalbec, and at Thebes; the palaces of the Maharajas, on the banks of the Ganges, sees monuments of splendid beauty, unsurpassed in any age, by any people; yet he returns to Rome, and says, while standing upon the vaulted ruins of the Baths of Caracalla, or while counting his steps across the floors of Constantine's Basilica, or while looking down from the uppermost tiers of seats into the arena of the Coliseum, that the constructive genius of all the rest of the world must bend before the Imperial Latin Engineer.

Never but once were thus combined in the political situation of a city, all elements needful for carrying up the culture of mere building talent to the highest pitch, while at the same time were offered unlimited opportunities for its exercise. Rome was a seaport, backed by a country fertile in supplies; a peninsula of mountains made of marble; in the centre of a vast sea, crowded with well-settled islands; and girt about with coast inhabited by the oldest, richest and most advanced communities of man. The Roman States were still physically undebauched; in the prime of its strength; irresistible lord of all Western and half the Eastern world; was infinitely rich; irresponsible and unscrupulous; proud and vain; sensual and sensational; loving war only for the sake of its enjoyments. The bath-house was the church of Rome, combining the essential qualities of the exchange, the club, the museum, the bar-room, and the polls. The Emperors enriched themselves and confirmed their power by watering their political stock.

Caracalla could afford his horse a golden manger in a temple of its own, after affording his fellow citizens a bagnio as large as the Tuileries, in which ten thousand bathers could enjoy themselves at once, the ceilings of which were eighty feet high, the partition walls as massive as the abutments of a bridge. The sweating-room alone was larger than the Philadelphia Cathedral, and surrounded by arcades, inside of costly Corinthian columns, the abstraction of which by the mediæval princes of modern Rome, for use in the construction of the private palaces, brought down the ceiling with a crash which shook the city as far off as the Castle of St. Angelo.

St. Peter's is built on the model of these ancient monuments. Its nave is precisely of the size and shape of the great room in the Baths of Diocletian and of the nave of Constantine's great church. Its dome is precisely the size and shape of the Pantheon, which, as is now well known, was yet another Imperial bath-room, since then appropriated to the uses of religion. The great Bath-room of Diocletian is also one of the grandest churches of modern Rome.

The necessity of supplying an amphibious population with floods of fluid, developed the civil engineering talents of the Empire. Scores of aqueducts were constructed above ground to bring the waters of the Apennines into the city, and an elaborate system of Sewerages carried it way again to be reperfired in the bosom of the Ligurian Sea. While Signor De Rossi has been excavating the ancient Catacombs outside the walls; and the Government Antiquarian, Baron Visconti, the ancient marble yards, and police stations inside the walls; and the Emperor Napoleon, the foundation rooms of the Palace of the Cæsars; the British Archæological Society of Rome has

been digging along the ancient walls themselves, and opening up the underground water works, reservoirs and sewers of ancient days. They have determined the true site of the fountain Egeria and of King Numa's Palace; how Royal Rome, Republican Rome, and Imperial Rome, were in succession fortified with longer and larger circumvallations; and how the water pipes of the engineers of the Middle Ages were ranged within and upon the conduits of Servius Tullius and the Tarquins. Any civil engineer who is curious in such matters, or would like to see nice pictures of the rubble work of his predecessors in the profession, twenty-two centuries ago, can gratify himself by looking over Mr. Parker's "Notices of Recent Excavations in Rome," just published in Part I. of the forty-second volume of the *Archæologia*. By-the-by, Mr. Parker's little handbooks of Architecture are not only indispensable to the tourist, but should be in every American gentleman's library. And it is worth knowing, also, that the Archæological Society which foreigners in Rome keep up, has upwards of a thousand special photographs of Specimens of Roman Construction, arranged in the order of time.

The first part of this interesting collection is already for sale, and illustrates the historical construction of walls in a series of sixty-four examples, beginning with the wall of Romulus, 750 B. C., and taking on an average one for each generation. The series is continued down to the 13th century A. D. In the time of the Empire the dated examples are so numerous that they are necessarily subdivided; afterwards the churches and monasteries supply us with a continuation of the series. This is really a great work for the history of architecture, such as has never been done before. Even D'Agincourt, in his admirable work, overlooks construction, which is the foundation of all. It is sometimes impossible to get photographs from nature for want of sufficient space, and it is generally necessary to fill up the excavations again immediately, so that the plans and drawings are the only mode of showing what has been made out; but photographs are made of these and sent to the Oxford Architectural Society.—*R. R. Journal and Mining Register*.

OFFICIAL NOTICES.



Ministry of Public Instruction.

APPOINTMENTS.

The Lieutenant-Governor,—in and by virtue of the powers conferred on him by the 45th and 136th clauses of Chapter 15, Consolidated Statutes for Lower Canada,—by an Order in Council dated the 12th inst., was pleased to make the following appointments, for the hereinafter mentioned Municipalities:—

SCHOOL COMMISSIONERS.

Gore and Wentworth, County of Argenteuil.—Mr. Thomas Riley, in the room and stead of Mr. Samuel Smith.—no election being held in July last; St. Elzéar, County of Beauce.—MM. Alexandre Pageot, jun., and Louis Gilbert, jun., in the room and stead of MM. Etienne Lessard and George Lehoux, there being no election within the time prescribed by law;

Lavaltrie, County of Berthier.—MM. Jean Baptiste Héту, Antoine Brault, Isaac Giguere, Xavier Lacombe, and Pierre Lacombe,—the elections of preceding years being irregular;

Paspébiac, County of Bonaventure: MM. Rémi Parise and Louis Huard, in the room and stead of MM. Théophile Chapados and Jacques Hacquoit,—there being no election for 1869.

Ristigouche (Indian), County of Bonaventure.—MM. Pierre-Jacques Capland, Thom's Métallie, Louis Capland, Louis Barnabé, and the Revd. Joseph Hercule Léonard, the elections of preceding years being irregular;

Longueuil (village), County of Chambly.—M. Adolphe Cherrier in the room and stead of M. Pierre St. Marie, retired from office, the election of 1869 being irregular; M. Pierre Moreau in the room and stead of himself, and M. Camille Provost, in the room and stead of M. Siméon Bonneville, retired from office.—the election of 1870 being irregular;

St. Malachie d'Ormstown, County of Chateauguay.—Messrs. Thomas Williams, George Elliott, Archibald Cameron, James Steele, and Francis Whitball,—the elections of preceding years being irregular;

Grande-Rivière, County of Gaspé.—The Revd. M. Pierre Saucier, in the room and stead of the Revd. M. Adeline Blouin, removed from the Municipality,—there being no election held within the time prescribed by law;

Longue-Pointe, County of Hochelaga.—M. Léon Léonard, in the room and stead of himself,—the election of 1869 being irregular;

Ste. Emmilie, County of Joliette.—MM. Jean-Antoine Leprohon, Pierre Robillard dit Lambert, Louis Rondeau, Pierre Gaboury, and Jean-Baptiste

Courtois,—new Municipality for the erection of which application was recently made.

Clarenceville, County of Missisquoi.—Mr. Philip Derick, in the room and stead of Mr. George Philips, deceased,—no election having been held within the legal time ;

St. Pierre, County of Montmorency.—M. Louis Ferland, in the room and stead of himself,—the election of 1869 being irregular ;

Nicolet, County of Nicolet.—The Revd. M. Louis Théophile Fortier, in the room and stead of himself, and M. Isaïe Desilet, in the room and stead of M. Joseph Lampron, retired from office,—the election of 1869 being irregular ;

St. Célestin, County of Nicolet.—M. François Bourbeau, in the room and stead of M. Edward Bourbeau, retired from office, and M. Théophile Béliveau, in the room and stead of himself,—there being no election in July last ;

Egan and Kensington, County of Ottawa.—Messrs. Patrick Moore, Charles McDonagh, Joseph Goddard, William Hébert, and John Kelly,—the elections of preceding years being irregular ;

St. Columban de Sillery, County of Quebec.—Mr. John Timmony in the room and stead of Mr. James Rocket, deceased,—there being no election within the legal time ;

Rimouski (village), County of Rimouski.—M. Pierre Ringuet, in the room and stead of himself,—there being no election in July last ;

Ste. Félicité, County of Rimouski.—The Revd. M. Luce Rouleau, in the room and stead of the Revd. M. J. O. Perron, removed from the Municipality,—there being no election within the legal time ;

Cacouna, County of Témiscouata.—MM. Adolphe Sirois, Benjamin Lévassieur, Henry Davis, Cyprien Guichard, and William Simard,—the elections of preceding years being irregular.

SCHOOL TRUSTEES.

Cox, County of Bonaventure.—M. Romain Joseph, in the room and stead of Mr. William Meagher, retired from office,—there being no election in July last ;

Hope, County of Bonaventure.—M. Pierre Grenier in the room and stead of M. Jacques Grenier, retired from office,—there being no election in July last ;

Notre-Dame de la Victoire, County of Lévis.—M. Robert Sample, sen. in the room and stead of Mr. Joseph H. Simmons, retired from office ; Mr. Peter Clark, in the room and stead of Mr. William Todd, removed from the Municipality,—there being no election within the legal time ;

St. Patrick of Rawdon, County of Montcalm.—The Revd. Pierre Arcade Laporte, in the room and stead of the Revd. M. J. O. Rémillard, removed from the Municipality,—there being no election within the prescribed time ;

St. Hippolyte, County of Terrebonne.—Messrs. Duncan McDonald, Charles Loherty and Joseph Bell, having recently declared *dissent*.

St. Sauveur, County of Terrebonne.—Messrs. William Shaw, Joseph Shaw, and Frederic Bell, having recently declared *dissent*.

The Lieutenant-Governor,—in and by virtue of the powers conferred on him by the 45th and 136th clauses of Chapter 15 of the Consolidated Statutes for Lower Canada,—by an Order in Council, dated 19th inst., was pleased to appoint, for the hereinafter described Municipalities, the following :—

SCHOOL COMMISSIONERS.

Anse-à-Valeau, County of Gaspé.—The Rev. M. François-Xavier Bossé, MM. Louis Chrétien, John Bond Larue, Thomas Ellement, and Thélesphore Joncas,—*New Municipality* ;

Ely (North), County of Shefford.—Mr. Thomas Cassidy in the room and stead of Mr. William Davidson, who has recently declared *dissent*,—there being no election within the time prescribed by law ;

I-le-Verte, County of Témiscouata.—Mr. Napoléon Côté in the room and stead of the Rev. M. Jean Lazare Marceau, removed from the Municipality,—there being no election within the time prescribed by law.

Ste. Marie, County of Beauce.—MM. Antoine Labbé, Joseph Morrisette, Jean Couture, François Bisson, and Moïse Grégoire,—the elections of preceding years having been irregular.

St. Jerusalem, County of Argenteuil.—Mr. William McOuat in the room and stead of Mr. David Black, removed from the Municipality,—there being no election within the time prescribed by law.

SCHOOL TRUSTEES.

St. Etienne, County of St. Maurice.—Messrs. John Baptist, François-Philippe Roy, and John Roberts,—the election of the preceding years being irregular.

ERECTION OF SCHOOL MUNICIPALITY.

The Lieutenant-Governor,—in and by virtue of the powers conferred on him by the 30th clause of Chapter 15 of the Consolidated Statutes for Lower Canada,—by an Order in Council dated the 12th inst., was pleased

To erect the new Parish of Ste. Emmélie (Vulgo l'Emergie), in the Township of Joliette, in the County of Joliette, into a School Municipality, with the limits hereinafter described, namely :—

1. In the Seigniorship of Ramsay, about two miles in depth, starting from the mearing between said Seigniorship and the aforesaid Township of

Joliette, comprising part of the Concessions of Ste. Eugénie and Ste. Catherine, as far as the lands at present inhabited by MM. Damase Desmarais and François-Xavier Tessier, inclusive ; part of the concessions of Feuille d'Erable (Maple Leaf, as far as the land owned by Louis Pierre Panet, Esq. of Montreal, inclusive ; Belle-Montagne, North-East as far as the land now occupied by Pierre Rondeau, junior, inclusive ; and Belle-Montagne South-West, (as yet uninhabited), at present forming part of the Parish of St. Jean-de-Matha ;

2. The four lots of the sixth, seventh, eighth, ninth, tenth and eleventh Ranges of the Township of Cathcart, lying nearest to the Township of Joliette ;

3. The first six Ranges of the said Township of Joliette.

Said new School Municipality of Ste. Emmélie is to have the same boundaries as the new Parish aforesaid, namely :—to the North and North-East the Crown Lands and the Township of Brandon ; to the South the remainder of the Parish of the said St. Jean-de-Matha, and to the West also the remainder of the Parish of St. Côme in the Township of Cathcart.

DIPLOMAS GRANTED BY BOARDS OF EXAMINERS.

QUEBEC (CATHOLIC).

Session of August 2nd, 1870.

MODEL SCHOOL DIPLOMA, 2nd Class :—Mr. F. X. Pagé (F), and Miss M. Noflette Clorinthe Talbot (F. and E.)

ELEMENTARY SCHOOL DIPLOMA, 1st Class :—Misses M. Exilie Chrétien, Octavie Delagrave, Rose de Lima Marceau, M. Emma Moreau, Mad. Ephrem Paquet née M. Seraphine Lamothe ; M. Amanda Tanguay (F), Johanna Emily Deegan (E), and Mary Zoé Green (F. and E.)

2nd Class :—Misses M. Lucie Boissonault, M. Julie Boisvert, M. Arthémise Caron, Joséphine Demers, M. Angèle Duclos, M. Elizabeth Denis, M. Margaret Gagnon, M. Elmire Gosselin, M. Mélanie Mailhot, M. Clarence Alphonsine Mayrand, M. Dina Parent, M. Céline Pelletier, M. Sophie Célanire Vachon (F), M. Flore Talbot and Mary White (E).

N. LACASSE,
Secretary.

Adjourned Session of November 8th, 1870.

MODEL SCHOOL DIPLOMA, 1st Class :—Misses Mary Ellen Hawkins and Elizabeth Neville (F. and E.)

ELEMENTARY SCHOOL DIPLOMA, 1st Class (F. and 2nd do E.) :—Miss M. Anne Sophie Leclerc dite Françoise.

2nd Class (F) :—Misses M. Léopoldine Anctil, M. Emma Bélanger, Léa Alphonsine Couture, M. Dina Goulet, M. Hélène Lafontaine, and M. Vitaline Marceau.

N. LACASSE,
Secretary.

RICHMOND (CATHOLIC).

Session of November 10th, 1870.

ELEMENTARY SCHOOL DIPLOMA (E), 1st Class :—Misses Jane Cokely and Margaret Lane.

F. A. BRIEN,
Secretary.

MONTREAL (CATHOLIC).

Session of November 2nd and 8th, 1870.

ELEMENTARY SCHOOL DIPLOMA, 1st Class :—Misses Alphonsine Archambault, Rosalie Brisebois, Philomène Chatel, Marguerite Dulude dite Huet, Rachel Leduc, Léocadie Plante (F), Alphonsine Lefebvre (F. and E.) ; Stéphanie Marcell (F), Anne Murphy and Mr. Joseph Mauffette (E).

2nd Class :—Misses Mathilde Beaubien, M. Azame Bélanger, Aurélie Bergevin, Marie Anne Deblois, Adèle Demers, Alphonsine Patri, Thimoléa Geneviève Tremblay (F) ; Zéphérine Dufault, Johanna Lawless, (E).

F. X. VALADE,
Secretary.

STANSTEAD.

Adjourned Session of November 8th, 1870.

ELEMENTARY SCHOOL DIPLOMA (E), 1st Class :—Misses Catherine Ball, Ida A. Shurtleff, Elizabeth A. Workman, and Mr. Herman E. Rickard.

2nd Class :—Miss Ann C. Howie.

C. A. RICHARDSON,
Secretary.

RIMOUSKI.

Session of August 2nd, 1870.

ELEMENTARY SCHOOL DIPLOMA (F), 2nd Class :—Misses Marguerite Bernier, Elmina Bouchard, Elizabeth Clouthier, Georgina Déchéne, Marie Langés, Victoria Lessage, and Délina Roy.

P. G. DUMAS,
Secretary.

CHARLEVOIX AND SAGUENAY.

Session of November 8th, 1870.

ELEMENTARY SCHOOL DIPLOMA, (F) 1st Class :—Miss Joséphine Simard.

CHAS. BOVIN,
Secretary.

THE JOURNAL OF EDUCATION.

QUEBEC, (PROVINCE OF QUEBEC) DECEMBER, 1870.

To Our Readers.

The approach of the close of the year reminds us of the custom of reserving space for a few parting remarks, of a general nature, addressed to the readers of this Journal. It will be seen, on referring to the contents of the several numbers of the year 1870, that the purposes for which it was originally established have been steadily kept in view. In addition to the necessary official intimations and statistics, there have been given at least the customary amount of reading on purely educational topics of practical value to the Teacher, and numerous articles of standard excellence appertaining to Literature, Science, the Arts, and other leading subjects, all having a bearing more or less direct upon the great business of education. While we have adhered to the practice—as a necessity of our position which is not without its disadvantages—of steering clear of topics of a controversial nature, we have not failed to present from time to time whatever has seemed best calculated to keep our readers informed of what has been going on here and elsewhere in respect of educational movements and progress and the changes or modifications of time-honoured opinions and practice.

Our teachers generally, still, it is to be regretted, hang back from communicating original articles on subjects connected with their vocation. This obliges us, in a measure, to fill the space allotted to practical teaching with selections from other sources such as contain the hints and illustrations most likely to be useful to them. But we take occasion to assure them again that the practice of contributing to the columns of this Journal, which we have heretofore invited on their part, would be found highly beneficial to themselves in the way of leading them, in spite of numerous admitted disadvantages in their positions, to prize more highly their noble calling, and to profit more intelligently by the study of the articles which we give from the pens of teachers belonging to other countries. We therefore repeat our invitation to teachers to become contributors in the form of short papers, which, when they turn out to be of practical value, will undoubtedly assist in bringing them into more deserved notice and in enlarging the sphere of their usefulness.

As meritorious exceptions, however, to the backwardness which has been just adverted to, we may be permitted to cite the example of Mr. Sturton, Public School Teacher at Pointe Lévis, who has contributed, during the past year, a series of four articles entitled "Floral Months of the Province of Quebec," and that of Dr. J. Baker Edwards whose valuable services have lately been secured to the McGill Normal School, and who opportunely furnished a couple of papers on "Modern Chemical Notation." Nor, while referring to original contributions, should we omit to thank the eminent meteorologist, Dr. Smallwood, for his interesting paper on "The partial eclipse of the Sun, August 7th 1869" which was communicated in our number for last March, and which, with the help of the accompanying woodcuts, would enable the intelligent teacher to afford his pupils an insight into the nature of the grandest of celestial phenomena.

The following selected articles, relative to practical teaching, which have appeared in our successive numbers for 1870, cannot have failed to prove instructive to our readers, and might be perused a second time with advantage: "On Teaching English" by Professor Bain; "School Discipline" from the Rhode Island Schoolmaster; "Teaching by the Page"; "The Teaching of Natural Science in Schools"; "Suggestions on the Teaching of History"; "Teaching Elementary Geography," from the Irish Teachers' Journal, a prize essay by Mr. T. Cummings who also gained the first prize awarded for essays on Arithmetic. Several of these articles being too lengthy for publication in a single number were necessarily given in parts.

On the now popular subject of Female Education we have given several very instructive papers, among which the following are of a nature to commend themselves to all thoughtful persons interested in the advancement of this branch; "Girls should learn to keep house" from the Presbyterian; "Special Education for Women" by Miss M. A. Ames; "What should women Study?" by J. Scott Russell; "Woman's work and woman's culture," given in the April number, and followed by the articles on "Russian School Mistresses" from the *Saturday Review*, and "Education of Girls." If space permitted we should also refer by title to a number of valuable papers on Astronomy, Botany and other Sciences in which these branches of knowledge are presented in a way to be of special interest to the teacher as well as to instruct the casual reader.

In our double number for July and August will be found, under the title of "Breaking up for the Midsummer Holidays," reports of the principal Institutions for higher education in this Province. We hope, in the next and following years, to be able to render these reports and the lists accompanying them still more complete; but, in order that this important object may be secured, the teachers and managers of the various public schools should be careful to furnish, in season, the materials duly authenticated, instead of leaving us to the hazard of errors, omissions, and imperfect returns, collected from casual notices, searched for in the newspapers.

The amiable prince, whom we have had with us in the past year, was not unmindful of the good to be done by manifesting a concern for education and Canadian literature, and we have duly chronicled the incidents. Our account of his appearance at the opening of the Royal Western School in Montreal, and the correspondence on page 112 will have gratified all our readers.

In the September number we recommended the former practice of the Journal in giving short but continuous articles on History, beginning with the Histories of Canada and of England, and intending subsequently to take up those of France and the United States. We select our passages from whatever authors appear most suitable for our purpose, which is, no less to furnish a useful outline of the events and facts, than to see that these are given in an attractive form, and one that is calculated to foster the love of a most important branch of instruction. In the same number the "Metrical System" of weights and measures is once more brought prominently before the attention of Teachers. We hope that our readers will again carefully peruse what is advanced on the subject (page 145-148), and perform their part in promoting the introduction of lessons upon that system into the courses of Arithmetic taught in all our schools.

We have now become so accustomed to witness the reappearance, in other publications, of articles reproduced from this Journal without any acknowledgment, that it is almost superfluous to specify the recurrence of this questionable practice during the past year.

We are unable, from want of space, to extend our observations on the contents of the present or 14th volume, yet, we must not omit to repeat our acknowledgments of the continued kind services of Dr. Smallwood of Montreal, and Sergeant Thurling, formerly of Quebec, and now of Halifax, for their interesting tables of Canadian Meteorology, contributed regularly every month.

In conclusion, while we trust that there is no reason for desisting the record of Educational progress during the past year, given in the pages of the Journal, our readers will join us in indulging the hope that we may be in a position to chronicle evidence of continued and still greater advancement during the year 1871.

Report of the Minister of Public Instruction for the Province of Quebec, for 1868 and in part for 1869.

(Concluded from our last.)

DIPLOMAS granted to Pupil-Teachers of the Normal Schools since the establishment of these Institutions.

Class of Diploma Granted.	Jacques-Cartier.	McGill.			Laval.					Total of both.
	Males	Males	Females	Total.	Males	Females	Total.	Males	Females	
Academy	25	14	9	23	24	...	24	63	9	72
Model School	111	19	144	163	92	124	216	222	268	490
Elementary do	94	31	319	350	49	160	209	174	479	653
Total	230	64	472	536	165	284	449	459	756	1215

It is not the number of pupils, nor the number of Diplomas granted by the Normal Schools, nor yet the system of teaching even, that appears to be the point at issue, but the actual results of these institutions.

Last year, on the motion of the Member for the County of Chicoutimi, a tabulated report was laid on the table of the House which went to prove that a greater proportion, of the ex-pupils of the Normal Schools, than was generally supposed, was actually engaged in teaching, and that they remained teaching much longer than was usually believed.

The following extract from the report of Mr. Principal Verreau of the Jacques-Cartier Normal School, for the year 1868-69, comes in support of what I have had occasion to frequently reiterate on this subject,

"So far as I have been able to ascertain about our ex-pupils," says Mr. Verreau, 3 have taught since 1857; 2, since 1858; 1, since 1859; 5, since 1860; 8, since 1861; 7, since 1762; 7, since 1863; 10, since 1864; 15, since 1865; 5, since 1866; 8, since 1867; 7, since 1868.

"Of those who have abandoned teaching, 4 taught for 10 years; several, for 7 or 8 years; 16, for 6 years; 7, for 5 years; 18, for 4 years; and 18, for 3 years.

It appears from the foregoing that 151 of the pupils who studied at the Jacques Cartier Normal School, taught for periods varying from 3 to 10 years, before abandoning the profession, and that 78 taught from the date of their leaving the school, and are still engaged in teaching.

If it be taken into account that the entire number of Diplomas granted by this school has been only 230, these figures will compare favorably with the results obtained by Normal Schools in countries more favourably situated than ours.

The proportion obtained in the Laval Normal School, particularly in the Female department, is much more considerable.

According to Principal Dawson's report for 1868-69, of 411 pupils who had obtained Diplomas from the McGill Normal School, 295 reported themselves as actually engaged in teaching, several others, in all probability are teaching, though not having advised the Principal of the fact, and 25 continued their studies to obtain Diplomas of a higher grade.

Annexed to this report will be found the special reports of Messrs. Principals Verreau, Dawson and Chandonnet on the question of agricultural instruction in the Normal Schools, and the report of M. l'Abbé Godin of his visit to the Agricultural Schools of Europe. All agree as to the importance of theoretical and practical instruction in agriculture in the Normal Schools, and Mr. Godin's report, containing much valuable information respecting the model farms of Ireland, France and Belgium, will be read with special interest.

As to the practical method of teaching agriculture in the Normal Schools, Mr. Verreau is entirely in favour of purchasing a farm, showing conclusively that, in the end, it would be more economical, inasmuch as the farm would furnish the greater part of the provisions required by the Boarding-house attached, and that the Government could, at any time, in case they considered the expenses too great, resell to advantage, owing to the rapid increase in the value of land in the neighbourhood of Montreal, while for a rented farm all that would have been paid annually, as rent or otherwise, would be a dead loss.

Principal Dawson says: "it would not be necessary that such farm or garden should be under the control of the Normal School, but only that it should be accessible, under proper regulations, to the students. The object in view might even be attained by making arrangements with skilful farmers in the vicinity of the city to allow their farms to be used for observation and practice by teachers in training."

M. l'Abbé Chandonnet is of opinion that it would be more advantageous to purchase than to rent a farm. Should it be deemed expedient to do otherwise, he thinks that a temporary arrangement, such as recommended by Principal Dawson, might be entered into with a farmer in the vicinity of the city.

With regard to Principal Dawson's recommendations, attention must be drawn to the fact that there is in the McGill Normal School but a small number of Pupil-Teachers of the male sex, and no boarding-house where the produce of the farm could be utilized.

I would also draw special attention to that part of his report where he recommends, by way of encouragement, a premium for the teaching of agriculture in the Primary Schools, as well as some other measures equally important.

"Some pecuniary aid," says Principal Dawson, "should be given to the teaching of the subject in the schools throughout the country. This might either be in the form of a special bounty per pupil, actually studying the subject, or in the provision of suitable books and apparatus, or in both ways. There should be special arrangements for inspection with reference to this department of the school-work, and there might be general examinations open to the pupils of all schools of the higher grades, with adequate prizes and certificates of merit.

"Another mode in which aid might be given to the schools would be by small grants to promote the culture of portions of

ground devoted to agricultural experiments in connection with each school. All these methods have been adopted with success in the introduction of agriculture into schools in other countries.

"The Normal school should be provided with abundant apparatus, models, specimens and books, so as to render the subject attractive, and adequately to represent its importance. If only space and cases were provided, a valuable agricultural museum could be accumulated in a short time at very little expense.

"Competent persons might be appointed as inspectors of agricultural classes and to hold examinations and to convene institutes of teachers in the several counties with the view of aiding the work, of informing the people as to its value, and of insisting on the principle that the scientific education of the mind of the farmer is the initial step in agricultural improvement. This function might be entrusted to the Professors of Agriculture in the several Normal Schools."

The introduction of agricultural instruction, into our Normal Schools, will certainly increase the efficiency of these institutions which have contributed so materially to elevate the standard of education generally throughout the Province.

The regulations which have been laid down for the guidance of the different Boards of Examiners, it is hoped, will have the same effect.

A statistical summary, which in virtue of the rules must be published annually, will be found annexed, in connection with which, I regret to have to state, as on former similar occasions, that a glance at the tabular statement will show that some of the Boards appear still to dispose a little too rapidly of the number of Candidates who present themselves for examination.

At present the competition between male and female Teachers furnished with Diplomas is so great that no practical inconvenience could result from being very strict, and making these examinations as efficient as possible.

ANNUAL Statistical Summary of the Boards of Examiners for the Province of Quebec for 1868.

BOARD	Number of days the meetings lasted.	Number of Candidates examined.	Mean number of Teachers examined.	Number of Diplomas granted for Academies, 1st class.		Academies, 2nd class.		Model Schools.		Elementary Schools.		Number of Candidates admitted and Class of Diploma.			Grand Total.	Number of Candidates rejected.			
				Males	Females	Males	Females	1st class.		2nd class.		Academy.	Model School	Elementary School.					
								Males	Females	Males	Females						Males	Females	
Charlevoix	2	12	6							1	6				9	9	3		
Montreal (Catholic)	8	202	25					2	2	3	7			14	176	190	12		
Id. (Protestant)	4	51	13	2				1	1					2	45	49	2		
Quebec (Catholic)	5	88	17	1										1	59	60	28		
Id. (Protestant)	4	21	5							1				1	19	20	1		
Three Rivers	5	100	20					1	4		5				74	84	16		
Sherbrooke	3	33	11	1		2		3	1					3	21	28	5		
Kamouraska	4	36	9												29	29	7		
Gaspé	1	1	1												1	1			
Stanstead	3	29	10												29	29			
Ottawa	4	20	5												18	18	2		
Beauce	3	39	13												27	27	12		
Chicoutimi	3	4	1												4	4			
Rimouski	3	10	3												8	8	2		
Bonaventure	3	7	3												7	7			
Pontiac	5	11	2							3	4				11	11			
Richmond	4	19	2							6					13	13	6		
Waterloo & Sweetsburg (C.)	3	9	5								5				9	9			
Waterloo & Sweetsburg (P.)	4	48	3								5	5			42	42	6		
Total	71	740	163	4	2	2	7	8	4	12	35	311	19	236	6	31	601	638	102

According to the Report for last year the number of Protestant Dissident Schools was 146 with 5018 pupils; Catholic Dissident Schools, 44 with 1463 pupils. The following Table shews the number of Dissident Schools in each District of Inspection for this year.

TABLE OF DISSIDENT SCHOOLS AND THEIR SCHOLARS.

Names of Inspectors of Schools.	Protestant Dissident Schools.	Number of Scholars.	Catholic Dissident Schools.	Number of Scholars.
J. B. F. Painchaud.....				
Rév. R. G. Plees.....	4	180		
L. Lucier.....	2	82	1	84
Th. Tremblay.....	2	66		
Vincent Martin.....				
G. Tanguay.....				
S. Boivin.....				
John Hume.....	5	231	1	20
P. F. Béland.....	1	45		
E. Carrier.....	2	81		
J. Crépault.....				
F. E. Juneau.....	4	126		
P. Hubert.....	4	196		
W. Alexander.....			10	204
B. Maurault.....				
H. Hubbard.....	7	204		
M. Stenson.....			9	319
R. Parmelee.....	15	406	11	408
J. N. A. Archambault.....	2	110		
J. B. Delage.....	7	150		
Michel Caron.....	17	508		
L. Grondin.....	13	509		
G. Thompson.....	9	398	12	694
F. X. Valade.....	23	763		
A. D. Dorval.....	6	160	1	26
C. Germain.....	7	197		
C. B. Rouleau.....				
Bolton McGrath.....	13	481		
	143	4893	45	1755

The following Table shews the State of the Fund for Superannuated Teachers since its establishment.

SUPERANNUATED TEACHERS' FUND.

Years.	Number of Teachers who subscribed each year.	Number of Pensioners each year.	Rate of pension for each year of teaching.	Total of pensions paid.
1857.....	150	63	4 00	886 90
1858.....	74	91	4 00	2221 74
1859.....	18	128	4 00	3115 36
1860.....	9	130	3 00	2821 57
1861.....	9	160	3 00	3603 58
1862.....	10	164	1 75	2522 09
1863.....	13	171	2 25	3237 00
1864.....	7	170	1 75	2727 00
1865.....	11	160	1 75	2587 00
1866.....	13	173	1 75	2724 00
1867.....	15	177	1 75	3036 00
1868.....	10	163	2 50	4597 00

The Legislature has increased the Superannuated Teachers' Fund by \$1500, and by the list published in the appendix, it may be seen that the pension which had been reduced from \$4.00 to \$1.75 has been increased to \$2.50 per annum for each year spent in teaching.

Either the publicity given to this fact has not yet attracted the attention of the greater part of the Teachers, or they do not appreciate the advantage of subscribing to this fund. Applications for pensions, by retired teachers who have never contributed anything towards the fund, are constantly received and necessarily refused.

In the appendix will be found, as usual, a list of the books distributed as prizes by the Inspectors of Schools during their visits. From 7,000 to 8,000 volumes are thus distributed annually, contributing to propagate a taste for wholesome reading and to spread useful information among many families.

Le Journal de l'Instruction Publique and *The Journal of Education*, both having the same mission, are sent to every School Municipality, and for a very moderate subscription (half a dollar per annum to Teachers and a dollar to others) each family may secure a useful repertory of Education, Literature, Science and Art.

All which is respectfully submitted,

P. J. O. CHAUVEAU,

Minister of Public Instruction.

Quebec, December 20th, 1869.

Anderson's life of the Duke of Kent.*

* *The Life of F.-M. H. R. H. Edward, Duke of Kent: Illustrated by his Correspondence with the De Salaberry Family, never before Published, extending from 1791 to 1814.* By Dr. Wm. James Anderson, L.R.C.S., Edin. Ottawa and Toronto: Hunter, Rose, & Co. 1870.

WHAT THEY SAY IN ENGLAND.

The author's modest preface takes his book beyond the reach of criticism, except so far as the intrinsic value of the materials is concerned. He professes himself a mere amanuensis, the medium for communicating to the world a valuable correspondence that has come into his possession. It appears that a Literary and Historical Society exists at Quebec, the object of which is the recovering, preserving, and publishing of documents and information illustrating the history of British North America. Of this society Dr. Anderson is President, and at one of its meetings he read a paper founded upon the correspondence in question. The success of the paper led to its expansion into the present work and although the title of Dr. Anderson's book is perhaps somewhat pretentious for its matter, yet it is so far justified that the contents are decidedly more biographical than historical. It is nothing more than a fragmentary sketch of the Duke of Kent's life, yet it has the merit, so rarely met with in much more elaborate biographies, of leaving us with a vivid conception of the Duke's character. The author, when he speaks in his own person in the brief intervals between submitting to us a succession of original documents, shows little of the special pleader. He leaves the letters to tell their own story, and, considering that they were written to a provincial family in the colony, and certainly without the faintest foreboding of their publication, they may be accepted, so far as they go, as unimpeachable evidence. Their testimony is harmoniously and irresistibly favourable to the character of the writer. Dr. Anderson has done posthumous justice to a prince who had scanty justice done him in his lifetime. Men's good works live after them and the disinterested and generous interest which the Duke of Kent took in the fortunes of the family of the Salaberrys has borne its fruits after the lapse of more than half a century. Viewed in that light, all the letters are valuable: regarded in any other light many of them could only have a very passing interest even for the gentleman to whom they were addressed. The De Salaberrys were a noble Basque family—poor probably, as most of the Basque nobility were—who had gone to the New World to repair their fortunes in the days of the French dominion. M. Louis Ignace de Salaberry was head of the house when His Royal Highness Prince Edward arrived in Canada in command of the 7th Royal Fusiliers. Forthwith between the two commenced an acquaintance which grew into a friendship that never flagged. The Prince, we are told, was "an able and voluminous correspondent," and Dr. Anderson furnishes us with ample written proof of the assertion. Among all the distractions natural to his age and rank, among official engage-

ments which he tells us himself gave occupation to half a dozen of overworked secretaries, the Prince found time to write to his friend, and often to write to him at almost excessive length. De Salaberry was a poor man with a numerous family, and relied upon Government appointments for making the two ends meet. The Prince was indefatigable in promoting his interests; not only did he attend to them while himself in power but he watched over them carefully when he was recalled and almost disgraced. M. de Salaberry had several sons who all adopted the profession of arms. As soon as they became of age to carry the colours, their zealous patron obtained commissions for them. Nor did the patronage consist in throwing them out into the world to sink or swim. He watched closely each step of their careers, neglected no occasion of pushing them in the service, gave them his advice and the means of acting upon it, provided them with the necessary introductions to their military chiefs, and on occasion opened his house and purse to them as to children of his own. Men in high places often make favourites and advance them but it is seldom that they give proof of the genuine nature of their interest by imposing on themselves no little personal trouble. As son after son gets to a point in his career where there is a choice of paths, it is pleasant to see the Prince carefully weighing advantages in their most minute details, as if it were a personal question, and giving satisfactory reasons why he shall exert his interest in a particular form. Nor was the Prince himself one of those favourites of fortune who had only to ask and have. The best part of his life was passed in the cold shade of disfavour; he was looked distantly on at Court, and was little liked in his family, while his brother at the Horse Guards was something very like a personal enemy. When he asked for his proteges, he had often to submit to rebuffs that he felt keenly, rebuffs that would have chilled at once a less warm heart. He was a thoroughgoing friend, but by no means an anscrupulous one. He did not fall into the fashion of the day in holding patronage to be matter of favour quite irrespective of merit. He had satisfied himself that the De Salaberrys deserved his countenance, and they did their best to prove him in the right. Three of them all of great promise, were cut off prematurely, and in rapid succession. All three died appreciated by their commanders, and lamented by their brother officers. The eldest son, and the sole survivor, Colonel Charles de Salaberry distinguished himself as "the hero of Chateauguay," a victory which Dr. Anderson has done something to redeem from ungrateful oblivion. Yet it was an affair to be proud of, and deserved to be remembered were it only as one of the few English triumphs in a calamitous and discreditable war. In a forest engagement Colonel de Salaberry manœuvred his 300 men so as to repulse the American general with 7,000, and avert the threatened invasion of Canada.

The Duke of Kent appears to have been one of those men—often the most sterling characters—who with good cause attach to themselves devoted friends, but who are very generally unpopular. He had a firm will and severe sense of duty which had gone very much out of fashion. He was in advance of his times and contemporaries, and held liberal views on certain subjects when liberal views were denounced as revolutionary. He seems never to have been a favourite with his father; was very little at Court; was kept much abroad in a sort of honourable exile, and in the matter of income and allowance was treated with exceptional narrowness and severity. From first to last he was always in debt, and Dr. Anderson demonstrates pretty satisfactorily, unlike his brothers, from no fault of his own. He was essentially an unlucky man, and *apropos* of his ill fortune we may quote, as evidence of the dangers run by our commerce seventy years ago, that five times in succession, the ships carrying him his outfits were captured by the enemy's cruisers. Had not Dr. Anderson given the names of the vessels and the circumstances, we might suspect the story; the marvellous coincidence sounds so like the hackneyed resource of an embarrassed man colouring an awkward balance sheet. Then the Prince was generally on indifferent terms with his brothers, especially with the Prince of Wales and the Duke of York, who as Regent and Commander-in-Chief respectively were masters of the situation so far as his pecuniary affairs and professional prospects were concerned. Prince Edward was bred a soldier and he turned out a thorough soldier of the old school, with its faults and its merits. His soul was in his profession, he made duty paramount so far as he was concerned himself, and he had no sympathy with any subordinate who shirked it. He was a martinet, and as even his admirers seem to have admitted, was apt to push discipline to vexatiousness and justice to severity. At that time, it is true, discipline had relaxed, even in fortresses of the first importance, to a point which we can hardly conceive, and which implied an extraordinary connivance on the part of the authorities. Any man setting himself to reform necessarily attacked a system of disorganization, and addressed a tacit reproach to every one concerned. from the Commander-in-Chief down to the rank and file. At Gibraltar no unprotected woman could walk the streets in

broad daylight, except at peril of gross insult if not of actual outrage. Old soldiers held it a matter of *esprit de corps* to get systematically drunk, and the officers in their way and degree were to the full as lax as the men. Prince Edward was sent out as Governor, and set himself at once to his ungrateful task. We can conceive, from what we hear of him that his system was rough and ready, and had more of the *fortiter in re* than of the *suaviter in modo*. There was universal discontent, and more than one attempt at open mutiny. But discipline was restored, the garrison brought into creditable condition and the place made habitable by civilians. The Duke's reward was his recall, although he still nominally held the appointment; and more is insulting still, the very Governor was restored to the Rock whose loose rule had reduced it to a state so discreditable.

As a man of decided views, earnest spirit and an energetic turn of mind, the Duke might have devoted his involuntary leisure to public affairs. But his father had invariably discouraged his wishes in that direction and even after the King's illness Dr. Anderson explains that the son's filial duty shrank from an act of disobedience which would have displeased the invalid in the event of his recovery. When, however, it became obvious that the King's state was hopeless, the Duke made his appearance in the House of Peers, and took a part in its deliberations. He voted in favour of the consideration of the petition for Roman Catholic relief, and assured the House "that he believed that the removal of the Roman Catholic disabilities was the first general measure by which the pacification of Ireland could be effected." During a long residence in Nova Scotia he had ample opportunity of studying North American politics, and Lord Durham expressed his opinion that "no one better understood the interests and character of the colonies." That Lord Durham was right seems demonstrated by the fact that in 1841 the Duke advocated that union of the colonies which has since been realized. His wedded life was a brief one. For five-and-twenty years Madame de St. Laurent "had presided over his domestic arrangements, possessing to the fullest extent his confidence, esteem, and affection, and sharing his joys and sorrows." But in 1818, on the death of the Princess Charlotte, when the perpetuation of the succession became matter of anxiety, the marriage of the Duke of Kent was made a question of State policy. It may be worth while quoting the language of Mr. Brougham in the preliminary debate in the House as to the pecuniary arrangements. Mr. Brougham said:—"He was persuaded that if the Committee were to vote on the ground of personal character or the private conduct of the illustrious individual in question, the motion would at once be disposed of, for he would venture to say that no man had set a brighter example of public virtue—no man had more beneficially exerted himself in his high station to benefit every institution with which the best interests of the country, the protection and education of the poor, were connected than His Royal Highness." The letters which Dr. Anderson publishes show that this was no formal flattery, and that the high praise was not undeserved; and he has done a service to history, as well as to the subject of his memoir, in placing one of the sons of George III, in a light so favourable.—*Saturday Review*.

Provincial Association of Protestant Teachers of the Province of Quebec.

The Annual Meeting was held on the 21st and 22nd of October last in the Hall of the McGill Normal School, Montreal. As we have not yet received the full report of the proceedings we can place on record only a few of the incidents.

The attendance was composed mostly of friends of Education belonging to Montreal, with some from the City of Quebec and the Eastern Townships—that of persons practically concerned in Education being comparatively small—and including all the teachers and pupil-teachers of the Normal School.

At the afternoon and evening sessions of the 22nd October, Judge Torrance, the President of the Association in the Chair, some interesting discussions took place on the best modes of teaching the French language, and the Annual Address was delivered.

On the morning of Saturday, the 23rd, the Chair was occupied by Dr. Miles of the Department of Public Instruction. Female Education, Evening Schools and Adult Education, and Object Instruction in connection with the teaching of Chemistry, were the chief topics. Principal Hicks, Dr. Dawson and Dr. Baker Edwards presented the opening addresses on those subjects, and in the discussions upon them Professors Kobins and Darcy, Dr. Graham of Richmond, and the chairman participated. The remarks of Dr. Dawson on female education, as conducted in Great Britain and the United States, and the paper of Dr. B. Edwards, upon Chemical objects lessons, illustrated by experiments, were listened to with much attention, and will, we hope, be published. The discussions were of of an eminently use-

ful and practical character, and, in course of them, the chairman brought under the notice of teachers present the valuable work on Domestic Economy recently published by Catherine Beecher and Mrs. H. B. Stow, and also an able paper on the nature and purposes of Object Lessons by Miss Lathrop, which appeared in the October number of the *Ohio Educational Monthly* for 1870.

Towards the close of this session, the members present were called upon to choose a place for the next annual meeting and to elect the officers of the Association for the ensuing year.

Meanwhile, Mr. Wilkie of Quebec opportunely addressed the meeting on the advantages to be derived from holding these assemblies of teachers in the cities on account of the greater facilities of access to public libraries, museums and collections of works of art, and, above all, the greater certainty of enjoying the co-operation of the ablest and most experienced professional teachers as well as of educated persons, whose services in the cause of education it was desirable to enlist as frequently as possible. Mr. Wilkie referred to the opportunity afforded in the cities of examining complete sets of school text books exhibited by the different booksellers, and such as were spread out for inspection upon the tables in the apartment in which they were at the moment in session. This latter suggestion told well upon the minds of teachers presents, for at the close of the meeting the teachers crowded round the tables and spent a considerable time in examining the text books.

On the motion of Mr. Shonyo of the Barnston Academy, seconded by another teacher from the Eastern Townships, Richmond was selected as the next place of meeting, and Dr. Graham of St. Francis College was elected President of the Association, by a majority of votes, for the ensuing year. Mr. Hicks, junr., Principal of the Model School attached to McGill Normal School, and Professor McGregor of the Normal School, were unanimously re-elected Secretary and Treasurer of the Association. The meeting then adjourned.

OBITUARY.

DEATH OF AN EMINENT SULPICIAN.

On the 20th day of October there died in the beleaguered city of Paris a man whose loss will be long felt and deeply mourned. On that day, the Sulpician Order lost one of its brightest ornaments, the Rev. Mr. Faillon, for many years Visitor of the Order, and a writer second to none of our contemporaries in the noble branch of literature which he pursued from youth to age. Mr. Faillon was eminently and distinctively a Christian writer, and a devoted student of the Christian past: whether studying, investigating, journeying in pursuit of the sacred lore which his gifted pen so successfully recorded, or writing the lives of eminent servants of God, and the history of Christian times and events, he did all for the glory of God and the honor of religion. In the deep quiet of the monastic state he labored, like so many of the monks of old, to promote Christian knowledge and sanctify his own soul, while recording the heroic virtues of other friends of God in the ages passed away. His thoughts, his efforts, were directed ever to the hallowed past of France and Canada, while walking ever in the presence of God, and the daily practice of the evangelical counsels that lead to perfection.

Mr. Faillon's best known works are the Life of Sister Marguerite Bourgeoys, foundress of the Congregation of Our Lady; the Life of Madame d'Youville, foundress of the Grey Nuns, and of Jeanne Manse, foundress of the Hotel Dieu; his last and greatest work,—which we fear he did not live to complete,—being *L'Histoire de la Colonie Française en Canada*, a voluminous work of vast historical and a chæological interest.

In Mr. Faillon, the Sulpicians, both here and in France, have lost one of the most exemplary members of their venerable Community, and Catholic literature a most faithful and devoted toiler in its cause.

—N.-Y. Tablet.

MR. A. S. RITCHIE.

It is our melancholy duty to record the death of Mr. A. S. Ritchie, a gentleman well known in Montreal as a zealous naturalist, as well as a most industrious man of business. He had been for many years in the establishment of Messrs. J. G. Mackenzie and Co., St. Paul street, and was a native of St. Andrews, Fifeshire, Scotland. He was chairman of the Council of the Montreal Natural History Society and an active member of the Microscopic Club. He was also a large contributor to the *Canadian Naturalist*, and one of its editing committee. His loss will be deeply regretted by a large circle of co-workers in science, by many personal friends, and by the young men connected with Erskine Church, in whose interest he had recently been so active.—*Witness*.

Current Exchanges and Books Received.

Littell's Living, No. 1386, December 24, 1870

THE PUBLISHERS OF LITTELL'S LIVING AGE announce that they will begin, with the new year, the publication of a serial story, entitled "Seed-Time and Harvest, or During My Apprenticeship," translated specially for them from the *Platt-deutsch* of the distinguished poet and novelist, FRITZ REUTER. No German author of the present time is more popular in his own country than Reuter, and by many he is considered "the most popular German writer of the last half century." His stories are written in *Platt-deutsch*, a dialect of North Germany, and the English writer, Charles Lee Lewes, says that "the Germans of the more Southern States, where *Platt-deutsch* is unknown, now frequently learn it for the sole purpose of reading Reuter's works." Reuter is especially noted as the rare humorist, the genuine poet and the fascinating delineator of the lives of his *Platt-deutsch* neighbors, and as such is probably more beloved than any other German author of the day. The story in question is said to be one of his best works, giving us a charming acquaintance with the quaint, interesting *Platt-deutsch* people. The publication of the translation is announced to be begun in the first number of *The Living Age* for 1871, and to be continued from week to week until it is completed.

The Living Age for 1871 will also contain serial stories by GEORGE MACDONALD and other distinguished English authors, together with the usual amount of the best scientific and literary matter of the day, making in all more than three thousand large pages of reading matter a year. The last two numbers of 1870, containing the beginning of Geo. MacDonald's story, are promised *gratis* to all new subscribers for 1871.

The subscription price of this sixty-four page weekly magazine is \$8, but for ten dollars any one of the American \$4 magazines is sent with *The Living Age* for a year. Littell & Gay, Boston, are the publishers.

The Nursery, a monthly magazine for youngest readers.—Prospectus for 1871.

THE NURSERY, now in its fifth year, presents, in the pictures and letter-press of its last twelve numbers, a proof of the fulfilment of the promises of its last prospectus, and an earnest of what it will do the coming year. In its ILLUSTRATIONS, it has been, and will continue to be, unequalled by any juvenile magazine. It will contain many original designs by American artists; while through our Special Agent in Europe, we shall get all that is freshest and best by those foreign masters who excel in sketches of child life.

No family in which the mental wants of children are cared for should be without *The Nursery*, as it is the best of all aids in teaching to read; inspiring a taste for letters and art, and filling the young memory with correct forms of speech.

Subscriptions may begin with any number. . . . Back numbers can be always supplied. . . . *Now is the best time to subscribe.* Terms, \$1.50 a year, in advance. Published by John L. Shorey, 36 Bromfield street, Boston, Massachusetts.

STEIGER'S LITERARISCHER MONATSBERICHT is the title of a German monthly magazine published by E. Steiger, 22 and 24 Frankfort street, New York, and devoted to the movements of current German literature. It is replete with information respecting new German books and periodicals. The publisher imports German works to order, having regular weekly and semi-weekly arrivals from Bremen and Hamburg.

THE NATIONAL TEACHER, December, 1870.

THE CINCINNATI MEDICAL REPERTORY, December 1870.

THE NATIONAL NORMAL, an Educational Monthly, December, 1870. Vol. II, No. 12 Edited and Published by R. H. Holbrook, No. 176, Elm street, Cincinnati, O.

THE ILLINOIS TEACHER, devoted to Education, Science and Free Schools, December, 1870.

THE AMERICAN EDUCATIONAL MONTHLY, devoted to Popular Instruction and Literature, December, 1870.

THE PENNSYLVANIA SCHOOL JOURNAL, Organ of the State Teacher's Association, and of the Department of Common Schools, December, 1870.

APPETON'S JOURNAL of Literature, Science and Art, January, 1871.

THE RHODE ISLAND SCHOOLMASTER, December, 1870.

THE CALIFORNIA TEACHER, a Journal of School and Home Education and Official Organ of the Department of Public Instruction, December, 1870.

THE YOUNG CRUSADER, Vol. II, No. 12, December 1870.

THE MAINE JOURNAL OF EDUCATION, December, 1870.

THE MASSACHUSETTS TEACHER, a Journal of School and Home Education, December, 1870.

THE WESTERN EDUCATIONAL REVIEW, November, 1870. E. F. Hobart and Co., Publishers, 794 Chestnut street. St. Louis, Mo.

SCRIBNER'S MONTHLY, an Illustrated Magazine for the people; Conducted by J. G. Holland, Vol. I. No. 3.

THE WEEKLY SPIRIT OF THE TIMES AND NORTRAMPTON EDUCATOR, December, 1870.

THE MANUFACTURER AND BUILDER, December, 1870. A good number.

THE TECHNOLOGIST,—especially devoted to Engineering, Manufacturing and Building, December, 1870,—contains some twenty-four articles,—five of them illustrated.

THE MINNESOTA TEACHER AND JOURNAL OF EDUCATION, organ of the

Department of Public Instruction and State Teachers' Association, December, 1870.

SCIENCE EDUCATION ABROAD, a Lecture by J. W. Dawson, LL. D., F. R. S., &c, Principal and Vice-Chancellor of McGill University, Montreal. This Lecture will appear in the next issue of the Journal.

THE ILLUSTRATED ANNUAL OF PHRENOLOGY AND PHYSIOLOGY, by S. R. Wells, Editor of the Phrenological Journal and Life Illustrated, New York, 1871.

ANNUAL REPORT OF THE BOARD OF ST. LOUIS PUBLIC SCHOOLS, 1868-69.

We are indebted to the courtesy of the Hon. Abram B. Weaver, Superintendent of Public Instruction for the State of New York, for a copy of his Annual Report for 1869.

EIGHTH REPORT OF THE BOARD OF EDUCATION OF VICTORIA, Australia. In our next number, we intend to give some extracts from this report.

TWENTY-SEVENTH ANNUAL REPORT OF THE BOARD OF EDUCATION OF THE PUBLIC SCHOOLS OF ROCHESTER, July, 1870.

Education.

—*Education in Scotland.*—The report of Mr. Walker, assistant inspector of factories, for the first half of the year 1870, states that being in Glasgow he examined 200 young persons, principally boys of 12 years old and upwards, employed in the tobacco manufactories of that city; they were selected at random, and proved a fair average of their class. Only 46 or 23 per cent. were able to read; and several of these read very imperfectly. It is right to add that many of the children employed in the tobacco manufactories in Scotland belong to the "Arab Class," whose parents are wilfully neglectful or have not the means of attending to their education. Others are orphans left to provide for themselves in the best way they can. Mr. Walker says that "in Scotland the parochial authorities, generally speaking, do not take much interest in the education of the poor and orphan children; their great object appears to be to keep down the rates." Scotland wants her Education Bill.

—Sir William Stirling Maxwell, says the *Edinburgh Courier*, has furnished another proof of his genuine interest in the cause of education by contributing £1,000 to the Glasgow University Fund.

—*I Have no Time to Study.*—The idea that a man has no time to study is a groundless delusion. Franklin found time, in the midst of all his labor, to dive into the hidden recesses of philosophy and to explore the untrodden paths of science. The great Frederick, with an empire at his direction in the midst of war, found time to revel in the charms of philosophical and intellectual pleasure. Bonaparte, with all Europe apparently at his disposal, had time to converse with books. Cæsar when his palace was thronged with visitors from the remotest kingdoms found time for intellectual cultivation. Every man, indeed, has time if he is careful to improve it. Let all, then, economise their moments, and their capacity for doing good will be greatly enlarged, and they will accomplish the highest and noblest end of their being.

—*Reading and Thinking.*—Bacon asserts that reading makes a full man; but without digestion fulness is dyspepsia, and creates sleepiness and inert fat, incapable of action. Hazlitt says you might as well ask the paralytic to leap from his chair and throw away his crutch, or without a miracle to take up his bed and walk, as to expect the learned reader to throw down his book and think for himself. He is a borrower of sense. He has no ideas of his own, and must live on those of others. The habit of supplying our ideas from foreign sources enfeebles all internal strength of thought, as a course of dram-drinking destroys the tone of the stomach.

—*Agricultural Education.*—The *Boston Journal of Chemistry* says on this subject: "The first lesson we would teach farmers in our college would be how to turn oil of vitriol out of a carboy, and not spoil their clothing; secondly, how properly to dissolve bone, prepare phosphatic fertilizers and efficient composts; third, how to use and how to take care of agricultural implements; fourth, how to lay drain tiles; fifth, how to plough and pulverize land so as to fit it for seed; sixth, how to make and save manures; seventh, how to feed and properly take care of stock; eighth, how to keep buildings and fences in order; and ninth, how to keep farm accounts systematically and orderly. We believe what is needed for the interests of agriculture is not so much 'agricultural colleges,' where young men are to have prolonged training in such branches of study as are taught in our ordinary educational institutions, but schools to which active farmers and their boys may resort in the winter months, and learn practically by observation and experiment how to conduct farming operations to the best possible advantage."

Literature.

—*The French Throne.*—During the last eighty years the French have displayed a remarkable aptitude in changing their rulers and governments:

1789. May 4.—The States-General, which had been in abeyance one hundred and seventy-five years, was summoned to meet at Versailles.

1792. August 10.—Louis XVI, deposed, and the republic established. September 21.—The National Convention assembles.

1793. January 21.—Louis XVI, guillotined.

1795. October 26.—The National Convention is dissolved, and the Directory established.

1799. November 10.—The Directory is suppressed, and a consulate established. December 13.—Napoleon Bonaparte appointed first consul.

1802. May 4.—Napoleon Bonaparte elected first consul for ten years, and on August 2, he is elected for life.

1804. May 18.—Napoleon elected Emperor of France.

1814. April 11.—Napoleon I. abdicates. May 3.—Louis XVIII. enters Paris.

1815. March 1.—Napoleon I. escapes from Elba, and the empire is reestablished for one hundred days. June 22.—He abdicates in favor of his son, Napoleon II. July 8.—Louis XVIII. returns to Paris.

1830. July 26.—Revolution commences in Paris. August 2.—Charles X. abdicates. August 9.—Louis Philippe ascends the throne.

1848. February 23.—Revolution commences in Paris. 24.—The king abdicates. 25.—The republic is proclaimed. December 10.—Louis Napoleon is elected president of the republic.

1852. December 2.—Napoleon elected Emperor of the French.

1870. September 1.—The emperor is taken prisoner by the Germans at Sedan, and sent to Germany. September 4.—Napoleon III. deposed, and the republic proclaimed.

—*The Strasbourg Library.*—In the Dominican Church of Strasbourg, was the great library, the finest on the Rhine, in which the archives, antiquities, typography, and early printing collections were treasured. All have perished. Not a single leaf remains. There was a fatality about the library. No catalogue of its many treasures exists. An elaborate one in MS. had been prepared by the librarian. It has perished. A whole library of MS. of the grand work of M. Silbermann, the Alsace antiquary, has perished, among them 16 folio vols, of MS. upon Strasbourg. Greatest loss of all is that of the most precious record connected with the discovery of printing, the documents of the legal process of Gattenbura against the heirs of his partner Erisehn, to establish his right as the inventor of typography.

—*Curiosities of Figures.*—Much has been said of late about the remarkable repetition of certain numbers in nature and history; and the following may serve as an interesting supplement. The figure nine, says a German writer, plays an especially striking role in history, and it is remarkable that a great number of the birth years of the celebrated men of the eighteenth century end with the figure nine. He brings the following examples in proof of his assertion, placing the year of birth after the name:

Glenn was born in 1719; Lessing, 1729; Schubert, 1739; Goethe, 1749; Schiller, 1759; Arudt, 1769; Oehlenschläger, 1779; Ruckert, 1789; Heine, 1799. These examples can be considerably increased by including non-Germans also. Johnson was born in 1709; Lichtwar, 1719; L. Braun and Goldsmith, 1729; George Schlosser, 1739; Lafontaine, 1759; Chateaubriand, Robert Burns and Caroline Pichler, 1769; Vander Velde, Steckfuss and Fanny Tornow; 1779; Cooper and Deinhardstein, 1789; Kopisch Balsac and Puschkin, 1799.

Then looking among the authors and men of science, we have:—Gmelin, 1709; Kastner, 1719; Moses Mendelssohn and Reinhold Forster, 1729; Ritter, 1739; Laplace and Jenner, 1749; Osiande, 1759; Alexander Von Humboldt, and Cuvier, 1769; Oken and Berzelius, 1779; Nauder and Dagussre, 1789; Schlick and Ifland were born in 1759; Romberg, 1769; Rossini, 1779; Overbeck, Schadow, Horace Vernet and Pierre Jean David, 1789; and Mendelssohn Bartholdy, 1809.

Some remarkable connection is also supposed to exist between figures and the four most important years of German history, 1812, 1830, 1848 and 1866. They all have an interval of eighteen years or 2x9 from each other. Add now the figures 1, 8, 1, 2, and then 1, 8, 3, 0: in both cases we get 13, that is 1, 2, the sum of which is 3: now add the figures 1, 4, 4, 3, and 1, 8, 6, 6, we get in each case by addition 21, that is 2, 1, the sum of which is also "3" also one of those numbers whose remarkable repetition is inexplicable.

Meteorology.

From the Records of the Montreal Observatory, Lat. 45° 31' North; Long. 4h. 54m. 11 sec. West of Greenwich. Height above the level of the

sea, 182 feet. For the month of November, 1870. By CHARLES SMALLWOOD, M.D., LL.D., D.C.L.

DAYS.	Barometer corrected at 32°			Temperature of the Air.			Direction of Wind.			Miles in 24 hours.
	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.	
1	29.862	29.911	29.942	31.9	52.2	41.3	w	w	w	201.10
2	.899	.784	.719	39.1	63.3	48.1	w	w	sw	97.44
3	.525	.624	.701	49.6	50.0	44.1	w	by s	sw	89.11
4	.901	.967	30.001	31.9	51.7	41.3	n	w	by n	79.44
5	.890	30.147	338	43.6	62.2	39.9	w	n	w	64.10
6	30.800	.314	.311	28.7	43.1	30.2	n	e	n	77.44
7	.061	.251	.352	30.0	41.2	37.0	n	e	n	64.10
8	.098	20.977	29.851	35.2	35.0	41.0	n	e	sw	81.10
9	29.601	.502	.650	48.0	57.1	47.0	w	sw	sw	121.14
10	.998	30.197	30.250	32.0	51.2	34.0	w	by n	n	214.00
11	30.100	.101	.100	26.1	52.0	40.1	n	by w	w	140.11
12	29.985	29.749	29.722	44.0	53.2	38.9	w	by n	w	91.12
13	.667	.744	.761	55.7	60.1	39.0	w	w	by n	77.21
14	.674	.668	.662	31.9	42.3	35.2	w	w	w	67.14
15	.633	.722	.801	33.0	46.2	35.1	w	by n	w	89.91
16	.815	.886	.997	31.9	47.4	37.0	w	w	w	94.00
17	30.048	30.072	30.050	33.1	50.4	34.2	w	w	sw	104.12
18	29.981	29.904	29.850	35.2	48.7	27.7	s	by w	s	82.00
19	.697	.689	.746	23.2	42.2	27.6	w	w	w	211.12
20	.947	.901	.874	22.6	29.1	33.0	w	sw	w	201.00
21	.890	30.101	30.301	36.0	38.6	28.0	w	w	w	79.97
22	30.462	.279	.201	23.6	43.0	27.2	n	e	n	80.24
23	29.501	29.409	29.560	29.2	32.1	30.0	n	e	n	181.20
24	.751	.820	30.026	26.0	32.0	26.8	w	w	w	101.11
25	.942	.861	29.847	34.0	38.2	36.2	w	sw	sw	84.29
26	.550	.502	.551	36.0	38.0	34.4	sw	w	w	69.42
27	.500	.217	.862	40.3	64.2	42.0	w	w	w	57.10
28	30.190	30.201	30.222	35.0	48.0	36.4	w	n	e	80.00
29	.100	.186	.257	32.1	38.4	33.1	n	e	n	67.44
30	.411	.342	.250	20.0	38.0	29.2	w	w	sw	84.11

The highest reading of the Barometer was on the 6th day, 30.500 inches, and the lowest was on the 23rd day, and was 29.469 inches, giving a monthly range of 1.031 inches. The highest temperature was on the 27th day, and was 64° 2. The mean temperature of the month was 33° 9, which is 6° 61 higher than the Isotherm for Montreal for the month of November. Rain fell on five days, amounting to 1.335 inches. Snow fell on six days amounting to 2.10 inches. The rivers in the vicinity of Montreal are quite free from ice.

—Observations taken at Halifax, Nova Scotia, during the month of November, 1870: by Sergt. John Thurling, A. H. Corps.

Barometer, highest reading on the 22nd.....	30.415 inches.
„ lowest „ „ 13th.....	29.089
„ range of pressure.....	1.326
„ mean for month (reduced to 32°).....	29.649
Thermometer, highest in shade was on the 3rd.....	61.6 degrees.
„ lowest „ „ 23rd.....	18.0
„ range in month.....	43.6
„ mean of all highest.....	45.9
„ mean of all lowest.....	30.8
„ mean daily range.....	15.1
„ mean for month.....	38.3
„ maximum in sun's rays (black bulb).....	99.0
„ minimum on grass.....	17.7
Hygrometer, mean of dry bulb.....	40.9
„ „ wet bulb.....	38.5
„ „ dew point.....	35.5
„ elastic force of vapour.....	208
„ weight of vapour in a cubic foot of air.....	2.3 grains.
„ „ required to saturate do.....	0.6
„ the figure of humidity (Sat. 100).....	81
„ average weight of a cubic foot of air.....	549.6
(1) Wind, mean direction of „ North.....	11.75 days.
„ „ „ East.....	0.00
„ „ „ South.....	8.75
„ „ „ West.....	9.50
„ „ „ Calm.....	0.00
„ force by estimation 0-12.....	2.8
„ daily horizontal movement.....	458.34 miles.
Cloud, mean amount of, (0-10).....	8.0
Ozone, „ „ (0-10).....	1.8
Rain. No. of days it fell.....	16 days.
Snow.....	4
Amount of rain and melted snow collected.....	6.18 inches.

(1) The Anemometer is in position at the Citadel.

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