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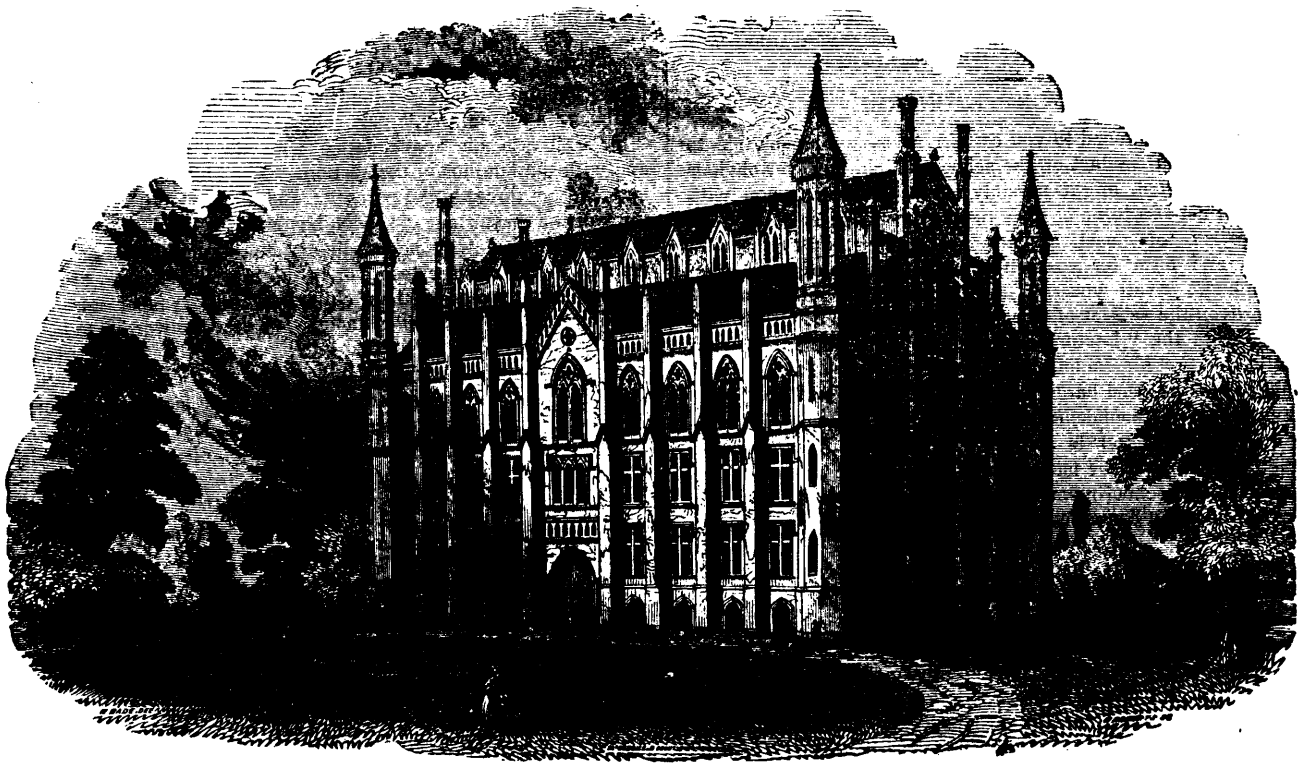


FREE ACADEMY OF THE CITY OF NEW-YORK.

This fine engraving presents a beautiful view of the *Free Academy of the City of New-York*,—an institution designed to impart, without charge to pupils, a scientific and practical education to those youth who have passed through the City Common Schools, but who do not go to a University. The style of the building is that of the Gothic Town Halls of the Netherlands—being, says the Architect, "at the same time the strongest, the cheapest, and the one best adapted to heat and ventilation." The length of the building, exclusive of all projections, is 125 feet, and the breadth 80 feet. The height to the eaves 65 feet, and to the top of the globe 100 feet. The height of the towers 110 feet. The building is divided into basement, three stories, and a great hall under the roof. The basement is 9 feet in height, and is arched to afford ground for exercise in bad weather. In it are also the Porter's lodgings, the Chemical Laboratory, and the closets for the hats and clothes of students. The first, second, and third stories are divided into four great rooms by two wide spacious halls, which are carried through the centre of the building longitudinally and transversely. Two of these rooms, on each floor, are again divided, affording smaller rooms for recitation, &c. Above these stories is the great hall, 125 feet long by 66 in breadth, divided by the king and queen posts of the roof (which are made ornamental,) into three aisles, the centre one of which is 40 feet in height, and the two side aisles are each 20 feet in height. The ceiling of this room is of wood immediately under the roof of which it forms a part, and it is ornamented with carved ribs of wood, in the manner of the old English college halls at Oxford and Cambridge. It is lighted by windows at the ends and by dormers in the roof, and is probably the finest collegiate hall in America. The expense of the building, without the furniture, is $46,000.

This Academy was established by the Board of Education for the City of New-York in 1847, in pursuance of authority granted by the Legislature on memorial of the Board, and on condition that the question of its establishment should be submitted to the people of the City, and should be concurred in by a majority of the votes given. The question was so submitted on the first Monday of June, 1847, and 19,904 votes were given in favour of the proposition to 3,409 against it. The act of the Legislature authorized the Board to erect a building at an expense of $50,000, and to raise *by tax annually* for its *support*, the sum of $20,000, exclusive of a proportion of the State Literature Fund, and any other means from other sources. Admission into the Academy is FREE, but is confined to those who have been pupils in the public schools of the City.

This noble institution was opened with impressive exercises on the 27th of January last; and the plan of instruction embraces a course of study between that usually pursued in American Colleges and that followed in the Polytechnique schools of Europe. Thus do the people of New-York provide for the highest English and practical education of the humblest of their youthful citizens. Would that their example were followed in all the Cities and Towns of Canada!

Miscellaneous.

THE NEGLECTED TEACHER.

(Written for the Common School Journal. By E. M. G.)

Why should the State its Teachers leave
In penury and pain;
And all its laws so thickly weave
For unsubstantial gain?
Are children now so valueless,—
These treasures of the sky,—
That statesmen never deign to bless,
But, ruthless, pass them by?

The State, with lavish hand, can urge
Whole Navies o'er the deep,
To mark with nicest care each surge
Where hidden corals sleep;—
But who maps out life's treacherous sea,
Or warns, with earnest breath,
When childhood's feet, so fearfully,
Go stumbling down to death?

The slaughter-captains, bathed in blood,
A thousand honours gain;—
Who drains a parent's crimson flood
Rides proudly o'er the plain;—
But the meek Teacher, weak and worn,
Who shield's the orphan's head,
With aching heart, and spirit torn,
Is grudged his daily bread.

But, courage, Teacher! faint not yet,—
A better day is near;
A day that glory will beget
For those who persevere.
Rise then to duty, stronger rise
With every defeat,
And crown a manly course, and wise,
With victory complete.

RULES FOR TEACHERS.

Suffer me to recommend to you certain rules, not unsuitable to be observed in your conduct of the school, which, however obvious when once suggested, might possibly not at all occur to you with sufficient distinctness to be at once reduced to practice.

1. Adopt, at the onset, a plan of operation; survey the field before you, and form for yourself a distinct system of instruction and discipline. Avail yourself, if practicable, of some work of reputation upon the subject of School-keeping, as "The School and School-master," the "Lectures before the American Institute of Instruction," the "Massachusetts School Reports," or other similar publications. I need hardly intimate, that he must have great resources, and great confidence in himself, who, at this day, presumes that nothing better is to be learned than we have practised from the beginning, in the management of a public school. The *literature* of the school-room is already considerable; and the subjects of reflection contained in it, not unworthy of the maturest and ablest minds.

2. Study to excite the *attention* and to awaken *thought* and moral *sensibility* in your pupils. Little is done in education, till mind is called into active, earnest exercise. It is of more importance to teach a child to *think* for himself than to burden with other men's ideas. To induce him to *feel* right and to *do* right, while yet a boy, is the best means of ensuring right feelings and right actions, when he becomes a man. A present duty done is the proper and only certain promise of future fidelity.

Make it a point to cultivate in the scholar an accurate and natural style of conversation—oral composition. Insist on a full, clear, correct expression, whenever a question is proposed or answered. Allow no clipped, imperfect, clumsy phraseology. It will be found very useful for this purpose, and a great assistance to the student in after life, in writing letters of business or friendship, and keeping records of events, or drawing a will, a deed, or a contract, to accustom him to translate passages of poetry, or prose, which he may read, into his own language.

If possible, introduce some simple music among the exercises of the day. It will serve the double purpose of interrupting the monotony of school hours, and of soothing and humanizing the spirit. Gentle music is a moral teacher. Make frequent use of the maps and blackboard.

3. In discipline appeal always to the best motives first. Insist on the *right*, the *proper*, the *becoming*, till grosser reasons are found to be indispensable; but maintain ORDER. And be sure, whatever system of government you may resolve to adopt, first of all, *govern yourself*. A clear, thinking, fair-minded, composed, quiet, dignified man is rarely insulted, or long disobeyed. There is no sphere of life, in which the silent influence of thought and goodness is more certain or valuable than in the discipline of the young.

The utility of formal rules is reasonably questioned. The general laws of propriety are obvious enough even to children. And it is not well to treat them as if they had either just done something wrong, or were just going to do so.

4. Make MORAL instruction a prominent object. Not by formal lectures, but by interweaving with the whole system of discipline those moral and religious sentiments, in which all Christians agree, and without which learning and talent are doubtful blessings, and life itself bleak, barren and desolate.

It is most desirable, and properly done would be rarely objected to, to open the daily exercise with a short, simple, pertinent prayer, or at least, with a portion of Scripture. And, in some form, it is, I think, the nearly unanimous opinion of experienced teachers, that a portion of the Scriptures should always be read. In many schools the day is opened with reading from the Bible, and close with a hymn of praise. The peculiar sentiments of particular sects of Christians are forbidden by law to be taught in public schools. But the same law enjoins upon all teachers "to impress upon the minds of the young the principles of piety and justice; a sacred regard to truth, love of country, humanity and benevolence; sobriety, industry and frugality; chastity, moderation and temperance; and all other virtues, which are the support and ornament of society; and to endeavour to lead them into a particular understanding of the tendency of all such virtues to preserve and perfect a good system of government, to secure the blessings of liberty, and to promote their future happiness; and the tendency of the opposite vices to degradation, ruin and misery."

5. Cultivate an acquaintance with the youth under your care, and with the families of the section. The children will often best be reached through the parents; and the general tone of feeling towards the master out of school, has much to do with the influence in school. You will be at liberty to assume, that the highest families in their own esteem, or in the esteem of others, are accessible to the teacher of their children; and you must not consider the lowest that has a child under your care, unworthy to be consulted by you. You will find intelligence without outward show, and meet oftentimes with sensibilities the most delicate, where the world has least to wonder at or talk of. The sweetest clusters of the vine are not always open to the glare of day.

6. Do not forget that among your own pupils, or in the circle to which they belong, there may be minds of the highest order—diamonds—ignots of virgin gold. Look for them; delight in them; rejoice to bring them out from their dark bed, and to hold them up to the sun. In yourself, it is not unlikely, such a mind may see realized, for the first time, its idea of an educated man—a scholar. Let it not fail to find, in this model—so certain to give direction to its ambition, and to form in some degree, its ultimate character—a simple earnest love of truth, an example of gentleness, courtesy, purity, integrity, and piety.—*Prof. Haddock.*

PARENTS SHOULD VISIT THE SCHOOL.

There is perhaps no part of parental duty more sadly neglected than this. "Out of sight out of mind," seems to be the maxim of too many parents as they send their children day after day to the school-room, to imbibe those principles, form those habits, and receive that instruction, which, as a beacon-light, shall guide their footsteps in the paths of virtue and usefulness, or lead them downward to ruin and disgrace.

To the intelligent and faithful parent, no place is dearer than the school-room. He has deposited there his dearest treasure, compared with which the wealth of a thousand Indies is as dross; a treasure capable of infinite increase and improvement; a treasure infinite in its capabilities and immortal in its duration.

What parent would trust his cattle or sheep, or even his swine to the keeping of another, without visiting them occasionally to see how they were thriving or fatting? What parent will lease his farm to another without well-attested bonds that it shall be faithfully tilled, that the fences shall be kept in good repair, and that in every respect, it shall be kept unimpaired? And yet how many intrust their children day after day, week after week, and year after year, to the hands of others, often entire strangers, without once visiting them, and in many cases, without even inquiring after their progress and welfare?

Parents should visit the school that they may be acquainted with the teacher of their children, and be better able to use their co-operative influence with his. Parents and teachers should work together as one. They should know the wishes and designs of each other, and labour mutually to carry them into effect.

Parents should witness for themselves the management of the school. Much of the difficulty that frequently exists between parents and teachers, is the legitimate result of ignorance on the

part of parents, respecting the real management of the school-room. The teacher, perhaps, has occasion to chastise a scholar for some misdemeanor; the scholar goes home with a sad report of his wrongs, accompanied by one of his playmates to attest to his abuses from the teacher. The parent, not daring to doubt the veracity of his child, at once gives judgment against that teacher, and thus, though undesignedly, gives countenance to the repetition of a similar, or greater offence on the part of his child.

Now, if parents were fully acquainted with the teacher of their children, and with his management in the school; if they were as willing and frank to converse with him respecting the errors as they are the virtues of their children, in nine cases out of ten, these little, petty difficulties, which so often mar the teacher's happiness, and many times impair his influence, would perish in their chrysalis state, or rather they could never exist.

Parents, you should visit the school that you may witness whatever is praiseworthy or censurable on the part of your children, and thus be able to encourage them in the former, and deter them from a repetition of the latter. What teacher has not seen the countenances of his pupils brighten as they anticipated a visit from their parents, and witnessed with pleasure the laudable pride with which they resume their seats after the recitation of a well-learned lesson in their presence. It seems to give a fresh impulse to the blood through their youthful and buoyant hearts, and to inspire them with increased fidelity to go onward and upward in the path of science and virtue.

You should visit the school that you may learn something of the teacher's duties, his labours and his trials, and that you may cheer his tried and drooping spirits amid the multiform and never-ending trials and perplexities of his profession.

As the faithful teacher labors week after week, sparing neither physical nor mental strength in whatever can benefit his pupils, as he feels himself careworn and weary, it is pleasant and encouraging to hear a cheering word from those whose interests are so closely allied to his own—*from parents.* It should be remembered that teachers have natures and feelings common to other men; and it is not strange if they sometimes feel discouraged and disheartened as they witness the apathy and indifference often manifested towards them, and toward their labors, by those from whom they have a right to expect the warmest sympathy and most hearty co-operation.

You should visit the school as a *duty* to yourselves, to the teacher, and your children; as a duty prescribed by your Creator, and one which you cannot neglect with impunity. He commands you to train up your children in the paths of usefulness and virtue, to train them up to love and serve Him, and the *School* is instituted as the most efficient auxiliary in carrying out this important requirement of the Creator; and parents cannot remain guiltless while ignorant of, or indifferent to the interests of so important and indispensable a means for the education of their children.

If you feel a desire to see your children improve, manifest that desire by *visiting them at the* SCHOOL-ROOM.—*Vermont School Journal.*

THE GREAT ECONOMY OF IMPROVING OUR SCHOOLS.

In this view, and as a mere matter of public economy, saying nothing of higher motives, we must endeavor to stimulate and perfect our schools. To unfold the creative talent and genius of our people, must be one of our first studies; for in this our best hopes of prosperity lie. We can better afford any waste than the waste of talent, and it is deplorable to reflect on the immense fund of talent we have slumbering in unconsciousness, or only half awakened, by reason of the defectiveness of our schools. The great first problem at the root of all prosperity, is to produce the most condensed virtue and intellectual capacity possible; for if we may give to one man the capacity of three, then he will produce three times as much, without consuming any more. So if you can open as much of manhood in ten as in thirty thousand people, (which is far from difficult,) you will have only ten for expenditure and thirty for production. Therefore, if you wish to make a city of ten thousand swell it to a population of thirty thousand, the readiest and surest way is to make the ten thousand worth thirty thousand by the stimulus of right education. Neither need you be concerned to find out beforehand how the ten thousand will produce a three-fold value by their industry. They will determine that for themselves. Having so much of manhood in them, as a creative power, it will be sure to appear in ways of its own. Nothing is better understood than that a dull family of mechanics, receiving low wages, will barely subsist, while a family that is quickened to inventiveness and skill, will command as much higher wages, as the values they produce are greater, and these will thrive in property, rise in character, become influential citizens, and act as stimulants to every kind of prosperity. An active, spirited and scientific body of mechanics, is a want everywhere. * * * Many we have, beyond all question, whose fine native capacity is rusting in dull obscurity and depression, never to be made conscious of itself, for want of a sufficiently quickening stimulus in our schools to bring it into action. For it is not nature alone that makes the man. Neither is it enough for us, when once a promising talent is unfolded, to detain it, if possible, among us by adequate encouragements, and aids to success. If we yielded all the encouragement to talent that we might, we should doubtless have more to encourage. But the living spark can be first kindled only by schools. It is the school that quickens curious thought, fills the mind with principles of science, and starts the inventive and creative powers into action. Therefore, I say, push your schools to the highest possible limit of perfection. Spare no pains, count no expense; for rely upon it, whatever you may do to make a city of men will go to make a city. Let every talent, every type of genius, in every child, be watched and nurtured by the city, as by a mother watching for the signs of promise in her sons.—*Dr. Bushnell.*

PRESIDENT EVERETT AS A COMMON-SCHOOL BOY.

In a late speech before a Committee of the Massachusetts Legislature, Hon. Edward Everett said: "I owe myself, a large debt of gratitude to the Public schools, although fifty years ago they were in a very different condition from what they are now. My education began at the Free schools of my native village of Dorchester, (for village it then was,) and of this the beloved city of my adoption. The first distinction which crowned my humble career was the Franklin medal at the reading school in North Bennet-street, when I was not much higher than that table; and if my tongue is ever silent when it ought to speak the praises of the Common Schools of Massachusetts, may it never be heard with favor in any other cause."

AMERICAN APHORISMS ON EDUCATION.

"Good instruction is better than riches," was the motto that William Penn, the illustrious founder of Pennsylvania, placed on the seal of a literary incorporation, granted by him 150 years ago. "In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened," said Washington. "A well-instructed people alone can be a permanently free people," said Madison. "Make a crusade against ignorance," said Jefferson.

HOW TO TURN WHAT YOU TOUCH INTO GOLD.

George Livermore, Esq., at the dedication of a school-house in Cambridge, said he had seen an old, worn school-book, bearing the name of the boy who used it more than a century ago. It was not larger than Colburn's Arithmetic, and not half as good-looking a book, yet fifty dollars had been refused for it, and one hundred dollars could not buy it. It was George Washington's Grammar. Think of that, boys! This is the way to turn what you touch into gold—*be good for something yourself.*

SOCRATES AND PLATO.

"It is related of Socrates, the greatest master of ancient Greece, that he saw in a dream a beautiful white swan flying towards him from the altar of Venus, and lighting in his lap. In a little time the bird spread his wings again, and rising into the air, went up, up, till it disappeared in the clear sky. The next day, while he was relating the dream to his pupils, Aristo came leading to him his son Plato. Socrates fixed his eyes upon the lad, surveyed his broad high forehead, and looked into his deep clear eye, and exclaimed, 'Behold the swan of my school.' He nursed the boy with parental pride and parental hopes; and the swan of his school became the noblest mind in the literature of his country, and has impressed its influence more sensibly upon the Christian ages than any other uninspired intellect."

School Architecture.

For the Journal of Education.

ON THE VENTILATION AND WARMING OF SCHOOL-HOUSES.

To the Editor of the Journal of Education.

Sir,—In the first and second Nos. of your Journal for this year, some extracts were made from an American work on "School Architecture," which prove that the author has given the subject more than ordinary consideration, evidently founded on an extensive experience.

The subject being one of much importance at the present time, when a general system of Education is likely to be established on a permament basis in this Province; and as the importance of having the School-houses constructed on the very best principles, will be admitted by all parties, I need scarcely offer an apology for the following remarks, which, I consider, devolves upon me as a duty.

I do not intend making any observations on the fitness of the designs, with regard to the ends in view; the only subjects to which I would direct your attention, are those immediately connected with the ventilation and the warming of the school-houses throughout the year. In the summer, ventilation only is required: ventilation and warming are required during the winter season.

For several years the attention of scientific men has been directed to these subjects, and various modes of warming and ventilation have been recommended; many useful improvements have been made, principally with regard to economy in the use of fuel—ventilation, in many instances, being overlooked or altogether neglected.

The necessity of ventilation is now universally admitted, though not sufficiently understood by those who are most interested in its adoption.

The evils attendant on want of ventilation are clearly proved on page 29 of your February number. The subject is there treated chemically, at the same time divested of all technicality; so that it may be understood by every one. The article on ventilation not being concluded in that number, will, I presume, be continued in the subsequent numbers, and the remedy pointed out.

In the January number, page 13, it is stated that "the proper ventilation of the room is provided for by the lowering of the upper sash, and by an opening 14 by 18 inches near the ceiling, into a flue which leads into the open air." Some better method than this will have to be adopted, as it will be found, on due consideration, not only to be improper, but quite inefficient.

The school room proposed to be ventilated in this manner is about 24½ feet long, 19½ feet wide, and 15½ feet high, and is intended to accommodate 50 scholars.

Assuming that 10 cubic feet per hour is required for each scholar (11 cubic feet being necessary for an adult), 500 cubic feet per hour will be required for all the scholars, and if they are confined in the school room for three hours, 500 cubic feet of *pure* air will be required during that time. The air in the room will of course be pure, and contains more than a sufficient quantity for the time, still it will be consumed at the rate of 500 cubic feet per hour. The air must therefore be constantly and regularly renewed in the above proportion, otherwise it will become vitiated and unfit for the use of the scholars.

Can this required amount of air be supplied through one opening, 18 inches long by 14 inches wide, without inconvenience or dangerous results? Is it not likely that those who may be exposed to the influence of the draught will suffer in consequence? That such will be the case, I give the following extract from a work on Ventilation lately published:—

"My attention was some time since drawn to a number of children who suffered from frequent coughs and colds in the head; they all belonged to the same school, and, on inquiring at the school room, it was found that this room was fifteen feet long, by ten feet wide, and twelve feet high, containing, therefore, about one thousand eight hundred cubic feet, inclusive of the seats and other fixtures; it was warmed by a small box stove, the funnel of which was thrust through the window. The number of children occupying this room was from fifty to sixty; they were seated along one side of the room, near the only window. As the heat was often great, this window was frequently opened, occasioning, by the entrance of cold air upon the heads of the children, the colds just mentioned.

"Notwithstanding the odour of the air was sometimes quite disagreeable, it was very difficult to convince the committee, whose duty it was to attend to the matter, that there was anything unhealthy in such a state of things. One person to whom the fact was mentioned, remarked, in extenuation of the evil, that they 'were very small children.'"

Again—will the air that is admitted by the lowering of the upper sash of one of the windows be thoroughly diffused throughout the room? In order to answer this question we shall have to trace its course. Supposing the air in the room to be warmer than the external air, the colder air in its entrance will take a downward course in the direction of the ventilating flue, and as it becomes expanded, will rise and escape into the external air; a circulation is immediately produced, and every particle of air in the room is set in motion, in the same manner as a stream of water produces eddies while passing through a pond. These eddies of air will sweep the floor as well as the sides of the room, and will become loaded with the lighter particles of dust, which is considerable even in the best kept rooms, so as to be quite unfit for breathing. It cannot certainly be considered *pure*.

The evils arising from this inefficient mode of ventilation during the summer months being shown, we shall endeavour to prove, to the satisfaction of every unprejudiced mind, that those evils are considerably increased during the winter season, where warming as well as ventilation will be required.

The school room is proposed to be warmed by means of a stove placed in the centre of the room. The application of heat to the air, introduced through the window, will increase the evils before mentioned, because a more rapid current will be produced. Besides this, an increased quantity of air will be required for the combustion of the fuel, even supposing an air-tight stove should be used. Can this increased quantity of air, or can any portion of air be introduced into the room without inconvenience, when it is considered that the thermometer is 10° or 12° below the freezing point? Experience proves the contrary; in the winter season, we carefully exclude the air, in order, as we say, to keep our houses warm.

Pure air cannot therefore be supplied except through casual openings, such as the "cracks and crevices" of the doors, windows, floorings, &c., which would create numberless draughts of cold air. The air thus supplied will be used in the combustion of the fuel, and to create a draught through the chimney. The scholars will not have the benefit of it, even supposing this to be possible, it will be in very small proportions; they will therefore have to breathe the same air over and over again, for three hours, loaded, as it will be, with dust and other increasing impurities, caused by insensible perspiration, and exhalations from the lungs,—the whole being kept in a constant state of agitation by the application of heat from the stove.

I need scarcely pursue those remarks any further, as it must be quite evident that the present method of ventilation and warming is not only improper, and inefficient, but is altogether inapplicable to the above purposes in this Province.

Should you consider the subject of sufficient importance as to require further elucidation, I will, in a series of letters, point out the injurious and expensive modes of warming and ventilation at present in use, and also explain the means by which those evils may be avoided, and an effectual and economical arrangement adopted, so as to ensure health with comfort, and to apply that element which the Almighty has blessed us with to its proposed use, for the purifying of our dwellings, and as a supporter of human life.

I have the honour to be,
Sir,
Your obedient Servant,

Kivas Tully,
Architect & Civil Engineer.

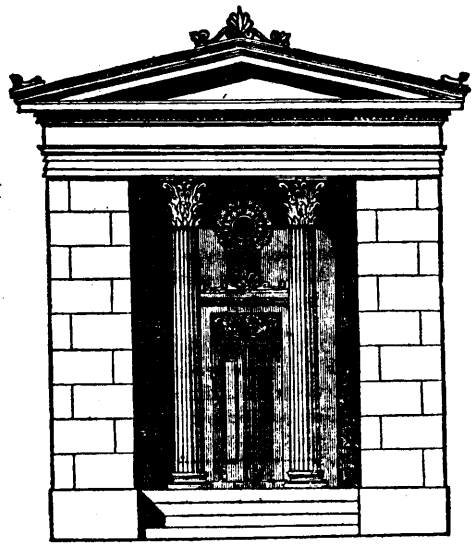
Toronto, March 3rd, 1849.

Note.—11 cubic feet of air per hour will be required to support life; but for the purposes of ventilation, a much larger amount will have to be supplied. Tredgold advises 240 cubic feet of air per hour. Dr. Arnott considers about 150 cubic feet to be sufficient; and, in the British House of Commons, for three weeks successively, during sultry weather, each member was supplied with sixty cubic feet per minute.

FRESH AIR.

HORACE MANN has well said: "People who shudder at a flesh wound and a trickle of blood, will confine their children like convicts and compel them month after month to breathe large quantities of poison. It would less impair the mental and physical constitutions of our children, gradually to draw an ounce of blood from their veins, during the same length of time, than to send them to breathe, for six hours a-day, the lifeless and poisoned air of some of our school rooms. Let any man, who votes for confining children in small rooms and keeping them on stagnant air, try the experiment of breathing his own breath only four times over; and if medical aid be not at hand, the children will never be endangered by his vote afterwards."

FRONT ELEVATION OF AN AMERICAN VILLAGE SCHOOL-HOUSE.



PLANS OF SCHOOL-HOUSES RECOMMENDED BY HER MAJESTY'S PRIVY COUNCIL COMMITTEE ON EDUCATION.

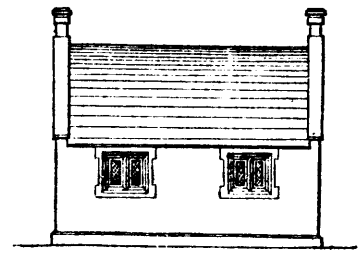
On the 33rd page of our last No., and on this page we have much pleasure in presenting our readers with Front and Side Elevations of School-houses from the "Series of Plans for School-houses" recommended by Her MAJESTY'S Privy Council Committee on Education. The Plans are very complete and beautiful. They are designed to afford accommodation for the Schoolmaster, in addition to the rooms occupied by the school itself.

The series of Designs for School-houses, from which the following are selected, were prepared by eminent Architects in England, under the direction of the Committee of Council on Education, in 1839–'40 in order "to enable the promoters of schools to avoid considerable expenses in the erection of School-houses, and to diffuse an acquaintance with the arrangements *which have been sanctioned by extensive experience.*" With a view to promote similar important objects in Canada, we have selected not only these neat and elegant plans of English School-houses, but have availed ourselves of the skill and enterprize of our American neighbours in presenting to our local school authorities the most approved specimens of American designs for School-houses, from either of which Trustees can select such plans as are best adapted to their Sectional taste and circumstances. In the rural sections, we doubt not that the American plans of School-houses will prevail, as being probably better suited to the climate and circumstances of the people; but in the Cities and Towns, we think the preference will be given to the Elizabethan style of the English School-houses. One or two School-houses in Toronto and Cobourg are of this style.

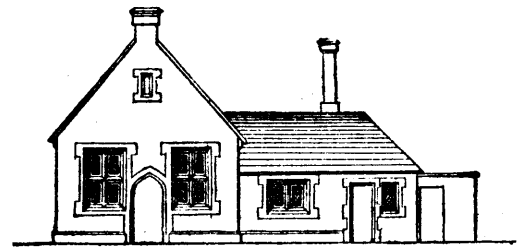
The design of the building, of which an engraving is given on page 33 (March No.), is in the mixed Tudor style. In it the Architect has aimed to apply the principles of Mediæval Architecture, as developed in the ecclesiastical and collegiate buildings in England, to village schools. The building will accommodate two schools—one for 80 boys, and the other for the same number of girls. Each wing is entered from the side. The apartments for the Teacher are entered by the porch in the centre.

In the Plans of School-houses, which we now insert, provision is uniformly made for the Master's residence—a wise and economical arrangement in connexion with our rural and village School-houses. The property of the Section would be better taken care of, and more of permanence and character would soon attach to the employment of teaching, if suitable apartments were provided for the Teachers.

PLAN—NO. 1. FRONT ELEVATION.

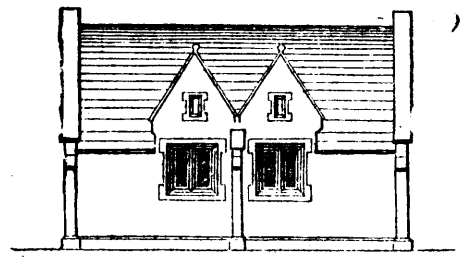


PLAN—NO. 1. SIDE ELEVATION



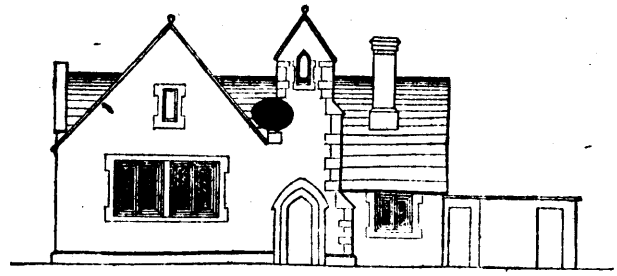
The foregoing Plan (No. 1) contemplates a School-room 22 ft. by 15, for 30 children, with apartments for the Master, consisting of one sitting-room, 13 ft. by 10, one bed-room, 10 ⋈ 10, and a kitchen 12 ⋈ 6, with two closets, 6 ⋈ 6, attached. These arrangements are limited by the strictest simplicity. The small window in the wing or projection, lights the Master's bed-room.

PLAN—NO. 2. FRONT ELEVATION.



In Plan No. 2, the School-room is 29 ft. by 18, with two lobbies and a closet in the rear, each 6 ⋈ 4, and will accommodate 56 pupils.

PLAN—NO. 2. SIDE ELEVATION.



The arrangements for the Master are the same as those in No. 1. In all the Plans, an independent entrance into the Master's apartments is provided, and the yards are also distinct. A *specimen* GROUND PLAN will be given as the series proceeds.

Educational Intelligence.

CANADA.

Extracts from the Report of the Rev. JAMES PADFIELD, *Supt. C. S., Bathurst District, to the Municipal Council, Feb.*, 1848.—Since your last Session, 90 Schools have been visited. In travelling through the County of Renfrew, which I did in the October, I found the Schools, with a few exceptions, all in active operation, and exhibiting in many instances gratifying signs of gradual improvement. In that County two new Schools have been opened, in well built and tolerably commodious School Houses, since my journey through it in March last; one in Westmeath, and one in Ross. My duty also required my visitation of several townships in the County of Lanark, in all of which I found the Schools in as flourishing a condition as could well be expected at so unfavourable a season. In Ramsay, in Lanark, and in Dalhousie, there was a full average attendance; every School Section had its School in operation, except one in Dalhousie, which had been closed a few days before I reached the neighbourhood. In the Township of Montague I found five Schools closed; while those in operation exhibited for the most part a satisfactory progress. Several other Schools in other Townships have also been visited since my second Report; and in all I found evidences of improvement, which, if properly encouraged, cannot but issue in good results. The Township of Dalhousie is particularly favoured, being well supplied with Teachers of diligent and industrious habits, whose earnest desire it seems to be, to discharge to the best of their ability the arduous duties of their office. This Township, since I have known it, has suffered less in its school concerns, from local jealousies and contentions, than almost any other township in the District, having the same number of Schools. Ten new School-houses have been erected or completed in the District during the year. In most of these erections a much greater regard has been paid to the fitness of the buildings for the purpose they are intended to serve than has heretofore been usual in many parts of this District. There is indeed yet room for improvement; but still, every friend of Education will rejoice at the increasing interest felt on this subject which those buildings exhibit. The parties who projected and carried on the works, deserve great credit for their exertions; and it is to be hoped they will witness the good effects of their labours in the additional advantages thus afforded to both teachers and scholars. The average amount of salary paid Teachers in this District, does not, I think, exceed thirty or thirty-five pounds per annum. The highest salary paid in 1848 was £95. Mr. Wilson's, of No. 4, Pakenham, ranks the next, £80. There are a few Teachers employed at salaries of £75, £70, and £60 respectively; while so many are engaged at low rates, as probably to place the average, nearly as above stated, if not lower.

Common Schools—Town of St. Catharines.—We are pleased to see a disposition evinced by the Board of Police to take active measures towards the improvement of our Common Schools. The Schools have been taken up by the Board and visited—Committees and a Superintendent appointed, agreeable to the requirements of the Act.—[St. Catharines Jour.

Examination of School No. 1, Town of Simcoe.—On Friday last we had the pleasure of witnessing the Quarterly Examination of the School in this town under the charge of Mr. HASKIN, and were much gratified with the proficiency and intelligence exhibited by the pupils, and the mode of instruction and discipline introduced by the Teacher. Each Class testified, by its prompt and correct replies to the questions propounded, a very satisfactory, and in some instances, surprising acquaintance as well with the principles as the practice of the several branches. We were pleased to notice that a good many ladies and gentlemen were present. After the Examination, the Rev. Mr. Bell, and other gentlemen present, expressed much satisfaction with the proceedings.—[Long Point Advocate.

Beautiful Testimonial presented to the Teacher of Stratford Union School, Huron District.—At a meeting of the inhabitants of Stratford, Huron District, held the 12th ult., for the presentation of a Silver Snuff Box to Mr. A. McGREGOR, Teacher of the Union School, J. C. W. DALY, Esq., was unanimously called to the chair. Mr. DALY having taken the chair, the Trustees of the School laid before him the memento, encased in a morocco casket. The box is one of the most beautifully executed and complete pieces of workmanship we have seen. It bears the following inscription, with the Macgregor's Armorial Bearings: "Presented to Mr. ALEXANDER McGREGOR by the inhabitants of Stratford, as a token of their esteem for him as a Teacher." In the course of the Chairman's address to Mr. McGREGOR, he observed, "That his (Mr. McG.'s) attainments, natural and acquired, he hoped he did not underrate, when he assured him that neither had called forth the present demonstration of respect and esteem. No, it was from the fact that, during the five years he has been in this place, there has not been a complaint from either parent or child of his want of authority on the one part, or his undue exercise of it on the other; that the progress the children have made, and are making, are too striking not to be generally noticed; while their moral conduct tells more for their preceptor than a thousand such mementos can tell. Yet the article he was now about to present, was a visible token of the high esteem in which he was held by the inhabitants." The Chairman then presented the Box, full of Snuff, to Mr. McGREGOR, who made suitable remarks in reply.—[Corres. British Colonist.

"Popular Ignorance," a Lecture, by the Rev. W. CLARKE, *Supt. C. S., Talbot District.*—On Thursday evening last, the Rev. the District Superintendent of Schools delivered a Lecture on "Popular Ignorance." He appealed in most appropriate and eloquent terms to his audience on behalf of Institutions having for their object the elevation of the standard of Education, and the promotion of useful knowledge. The address was a superior one, and was listened to throughout with great attention by a large and intelligent assemblage, which, as a testimony of its gratification, presented the Rev. gentleman, at the close of his Lecture, a cordial and unanimous vote of thanks.—[Long Point Advocate.

Bishops College, Lennoxville, L. C.—We understand that Dr. S. C. Sewell has, or is about to receive, the appointment of Professor of Chemistry, Agricultural Chemistry and Natural Philosophy, in Bishop's College, Lennoxville.—[Montreal Transcript.

New City and Town Superintendents.—The following gentlemen have lately received the appointment of Superintendent of Schools for the respective towns named:—

R. S. HENDERSON, Esq., City of Kingston.
Rev. A. DIXON, A. B., Town of St. Catharines.
CHARLES POOL, Esq., Town of Cornwall.

School Assessment, City of Kingston.—At a recent meeting, the Corporation of Kingston, on the recommendation of the Board of Trustees, imposed an assessment "of two pence in the pound on all Real and Personal Property" in that city, for Common School purposes for the year 1849.

BRITISH AND FOREIGN.

Effects of Education and Ignorance in the Provinces of Ireland contrasted.—From statistical tables, recently published, it is ascertained that the majority of the *uneducated* over the educated, is, in

Connaught, ...	542,150
Munster, ...	442,954

The majority of the *educated* over the uneducated, is in

Ulster, ...	389,739
Leinster, ...	207,832

From August, 1845, to October, 1846, offences against person, property, and the public peace:—Leinster, 2,699; Munster, 3,279; Ulster, 1,465; Connaught, 3,314.

Considering the population of each province, Connaught maintains an absolute pre-eminence in crime fully equal to that which it holds in ignorance.—[Evening Post Correspondent.

Military Education.—The Commander-in-Chief has resolved on causing all candidates for the army to present themselves for examination in such attainments as he deems absolutely requisite for the proper performance of their duties. We have not been able to learn the period when the examinations will be commenced, nor the course of study; but we have reason to believe that the order will not be delayed, and that the course will be one well calculated to secure intelligent and educated gentlemen, yet such a course of study as cannot deter even non-commissioned officers from aspiring to pass its ordeal.—[Naval and Military Gazette.

The first party of military schoolmasters, educated under the new system introduced by the Rev. Mr. Gleig, chaplain general to the forces, at the Royal Military Asylum, at Chelsea, will leave that establishment in the course of next month, to join those regiments in which vacancies have been caused by the discharge of the schoolmaster sergeants employed under the old system.

Agricultural Schools in France.—At a recent Session of the National Assembly in France, the principal part of the day was devoted to the bill relative to the agricultural schools. It was resolved that one of these institutions should be founded and maintained in each department at the public expense, and further, that the country should be divided into agricultural districts, not exceeding twenty, in each of which a government school is to be established.

Elementary Education in the Island of Barbadoes—Public Provision for Schools.—In Sir WILLIAM COLEBROOKE'S Speech from the throne to the Legislature of Barbadoes, the 30th January, we observe that His Excellency strongly recommends that public provision be made for the establishment and maintainance of Common Schools.

From the Barbadoes papers we also learn that Sir WILLIAM COLEBROOKE had given a very pleasant entertainment, at the Government-house, to the children attending the public schools, 674 in number. They were invited to ramble and play about the grounds as long as they liked, and were afterwards feasted with cakes, fruits, lemonade, &c., &c.—[N. Y. Spectator.

Education at the Sandwich Islands.—The last Government report on the condition and prospects of the public schools, states, that "the number of youth in all the schools on the Islands may be safely estimated at 20,000; and it is believed that in no year since the introduction of Christianity, has the cause of national education advanced more steadily and surely, not to say rapidly, than during the past year."

Destruction of the Turkish Medical School.—The late extensive conflagration at Constantinople, (11th October,) has destroyed the School of Medicine of Galata Serail, with the dispensary, the museums, the library, the botanic garden, and the residences and goods of the forty Professors, and of the four hundred Students. The loss sustained is valued at 15,000,000 piasters, comprehending the collection of fifteen years, made at great expense and trouble. This deplorable event has consequently put a stop to the course of instruction for the present.—[Medical Times.

Progress of Free Schools.—An Act has recently passed the New-York Legislature establishing Free Schools in the City of Troy, N.Y. The system has also been extended to the Counties of the State.

Adjuncts to the State Normal School at Albany.—The New-York Legislature has lately appropriated $250 "to some one Academy in each County, to be designated by the Regents of the University, which shall educate at least 20 Common School Teachers during a period of four months." These Academies will thus be co-workers with the flourishing State Normal School Establishment at Albany.

Education of the Indian Tribes in the United States.—In the late Report of the Secretary of War we find the following testimony to the success of those engaged in educating the (in many ways) ill-treated aborigines of this continent:—

"No subject connected with our Indian affairs has so deeply interested the Department and received so much of anxious solicitude and attention as that of education; and I am happy to be able to say that its efforts to advance this cause have been crowned with success. Among most of the tribes which have removed to, and become settled in, the Indian country, the blessings of education are beginning to be appreciated, and they generally manifest a willingness to co-operate with the Government in diffusing these blessings. The schools already established have an increased number of pupils, and preparations are making for establishing many new ones. Much credit is due to many excellent Missionary Societies of different Christian denominations, for their aid and contributions to sustain and advance the cause of education among the Indian population. There are sixteen manual-labour schools, and eighty-seven boarding and district schools, now in successful operation among the various Indian tribes; and the number of Indian youths attending them, according to the reports received at the Department, is three thousand six hundred and eighty-two, of which two thousand six hundred and fifty are males, and the remaining one thousand and thirty-two are females. The schools are generally in charge of Missionary Societies, and are well conducted. These facts afford the most gratifying evidence that nearly all of our colonized tribes are rapidly advancing in civilization and moral improvement; and I trust it may not be improper on this occasion for me to say, that for the highly improved and rapidly improving condition of the Indian tribes over which the guardianship of the Government is extended, not only in regard to education, but most other respects, no stinted measure of credit is to be ascribed to the ability, industry, and faithfulness of that branch of this Department to which the management of our diversified and difficult Indian affairs is assigned."

Schools in Illinois.—Returns from 60 Counties of Illinois show a result, in educational affairs, as follows, viz:—School Districts, 2,002; Schools, 2,137—1,565 of which are taught by males; total number of scholars, 51,447; number of school-houses, 1,937. The wages of male teachers range from $12 to $20 per month; females from $6 to $20. The number of persons in the State under 20 years of age is stated at 209,639.

The School Fund of Tennessee is $1,300,000, and the annual income which is now distributed to the Common Schools and Academies of the State, amounts to $135,000.

Public Schools in Pennsylvania.—An elaborate report from the Superintendent of the Common Schools has been presented to the Legislature. The operations of the system for the last year are presented in the following condensed view. Since the passage of the Act of the 1st of April, 1834, upwards of three millions of dollars have been appropriated by the State for School purposes, and five millions have been raised by the citizens by taxation for the same purpose:—

Whole number of districts,	1,306
Number paid during the year,	1,153
" reporting,	1,102
Whole number of schools,	7,845
Number yet required,	486
Average number of months taught,	4,241
Number of male teachers,	6,065
" female teachers,	3,031
" male scholars,	197,984
" female scholars,	162.621
" scholars learning German,	6,931
Average number of scholars in each school,	44
" salaries of male teachers per month,	$17 37
" " female teachers per month,	10 55
Cost of teaching each scholar per month,	45
Amount of tax levied,	508,696 51
Received from State appropriation,	193,835 75
" collectors of school tax,	392,442 56
Cost of School-houses, repairs, &c.,	96,539 47

This, compared with the previous year, shows that there has been an increase in the number of districts, of 57; in the number paid of 99; in the number reporting of 54; in the number of schools of 525; in the number of teachers of 422; in the number of scholars of 23,633; and in the amount of tax levied of $71,963 71.

The defects in the practical operation of the system are noticed; better salaries to teachers, and longer average time for the schools to be kept open, are suggested as necessary to the perfection. The report is accompanied with a detailed statement of the methods of teaching adopted in the State Normal Schools of Connecticut, which presents some suggestions worthy of being adopted in the practice of teaching in all our Common Schools.

The Legislature of Louisiana has appropriated $600,000 for the support of Common Schools in that State, exclusive of New-Orleans, and $50,000 more for that City.

Lewisburgh University.—It is announced in the *Christian Chronicle*, that a subscription of $100,000 has been secured for the endowment of a University at Lewisburgh. The Institution is to be under the direction of the Baptists of Pennsylvania.

Education in Massachusetts—TRUE PROGRESS.—The people of Massachusetts voluntarily taxed themselves last year one million of dollars for the support of Common Schools. There is not a native born child in that State, old enough to learn, who cannot read and write. In Boston, $200,000 were expended in building school-houses during three months preceding April last. Within the year past, individuals have given $200,000 to Harvard College. The State is building a reform school for vagrants and exposed children, at a cost of $100,000. The State educates all the deaf, dumb, and blind, and has established a school for idiots.

Statistics of Common Schools, City of New-York, for the year 1848.—The average number of scholars that actually attended the several schools during the year was 35,644, viz:—

Public Schools, 18,587 | Ward Schools, 14,652 | Corporate Schools, 2,124

The number the previous year was 32,122, viz:—

Public Schools, 18,646 | Ward Schools, 11,597 | Corporate Schools, 1,878

Increase in the Ward and Corporate Schools over previous year, 3,300; of which the Ward Schools had 3,054, and Corporate, 246. The total sum paid for the support of Common Schools during the year was $340,004.38, thus raised:—Balance to the credit of Common Schools on the 1st January, 1848, $101,201.38; State apportionment, $40,621.53; tax levied in 1848, $255. Of $245,358.54 paid out of levy of 1848, the following are the principal channels of expenditure:—For "support" and "expenses" of Common Schools, $160,741.29; for rents, $4,105.00; sites, building, and repairs, $57,703.64; and the remainder for sundry expenses. The expenses for Common Schools during 1848 was $40,000 greater than at any former time.—[New-York Spectator.

Academies in New-York.—There are 153 academies in the State of New-York, with libraries exceeding 63,000 volumes. More than 25,000 pupils were in attendance last year.

JOURNAL OF EDUCATION.

TORONTO, APRIL, 1849.

The large space in this number devoted to the NORMAL SCHOOL has precluded the insertion of several editorial articles, notices, &c. For Opinions of the Press, &c., see 64th page.

HALF-YEARLY EXAMINATION OF THE STUDENTS AND PUPILS IN THE NORMAL AND MODEL SCHOOL FOR UPPER CANADA.

The public half-yearly Examination of the Students and Pupils in this important establishment took place on Tuesday, Wednesday, and Thursday, the 10th, 11th, and 12th of April, according to the following Programme :—

PROGRAMME OF THE SEMI-ANNUAL EXAMINATION

Of the Normal and Model School for Upper Canada, at the close of the Winter Session, 1848–9.

From Saturday to Thursday, 7th to 12th April, 1849.

NORMAL SCHOOL.

Saturday and Monday (private.)—Examination for His Excellency the GOVERNOR-GENERAL's Prizes in Agricultural Chemistry, &c.

Tuesday.—Mr. HIND, 10–11,—Science and Practice of Arithmetic, with the use of Logarithms—Algebraic formulæ for Arithmetical purposes—Mensuration—Theory of Book-keeping—Mental Arithmetic. Mr. ROBERTSON, 11–12,—Philosophy of Grammar—Writing (Mulhaüser's System. Intermission. Mr. HIND, 2–3,—Algebra—Algebraic Problems—Geometry—Algebraic formulæ, applied to the purpose of Mensuration and Surveying. Mr. ROBERTSON, 3–4,—Geography—Mathematical, Political, and Physical.

Wednesday.—Mr. ROBERTSON, 10–11,—General Rules of Orthography and composition of words, prefixes, and affixes—Rudiments of Logic. Mr. HIND, 11–12,—General principles of Mechanics and Hydrostatics—Steam Engine, Locomotive—Hydrostatical Instruments—General Principles of Astronomy, of the Natural Sciences, (Light, Heat, Electricity, and Magnetism.) Intermission.—Mr. ROBERTSON, 2–3,—General History—Synchronetic Table. Mr. HIND, 3–4,—Natural Sciences, (continued)—Agricultural Chemistry—Vegetable and Animal Physiology—Chemistry of Food—Application of scientific principles to the preparation of Food.

MODEL SCHOOL.

From 9 to 12 o'clock—to be held in the Model School.

Thursday.—Mr. McCALLUM, 9 to 9¾,—Grammar—Reading Lessons. 9¾ to 10½,—History—Object Lesson in the Gallery. Mr. SANGSTER, 10½ to 11,—Geography, (Senior Division.)—Mr. McCALLUM, 10½ to 11,—Geography, (Junior Division.)—11 to 12,—Science and Practice of Arithmetic (on Black Board)—Mental Arithmetic—Mental Algebra. Intermission.

NORMAL SCHOOL.

Mr. TOWNSEND, 2–3,—Hullah's System of Vocal Music.

3–4,—Distribution of PRIZES given by His Excellency the GOVERNOR-GENERAL, by the Hon. Chief Justice ROBINSON.

CONCLUSION.

No text-book (except in reading) was used by Master or Student throughout the Examination, and no questions had been previously prepared. The Masters *teach by lecturing* on the several subjects embraced in the course of instruction—that is, by daily oral lectures (with illustrations) and examinations; and the Public Examination was a simple exemplification of the mode of daily examining the classes on the subjects of the lectures. For range of topics, for time employed, and for its thorough practical character, this Examination exceeded any preceding one, and elicited the expression of the unqualified approval and admiration of the numerous visitors—including able scholars, experienced instructors, and gentlemen of the highest standing in the community,—such as the Lord Bishop of Toronto, the President of King's College, the Hon. the Chief Justice, several Collegiate Professors, and Clergymen and Gentlemen of various professions and persuasions.

The Examination of the pupils in the Model School attracted an unprecedented number of visitors, and excited their warmest admiration and applause—practically illustrating as it did the *natural* and *intellectual* method of teaching adopted in the Normal School in its results upon children from *five* to *sixteen* years of age, and in the various stages and on the several subjects of elementary English education. This School consists of 150 pupils—is visited two hours each day by the Masters of the Normal School—is taught by two young men who have had a year's training in the Normal School, besides previous practice in teaching. In this School each Normal School Student teaches some hours each week, with the view of reducing to practice the subjects and method of teaching taught in the Normal School. The Examination of the Model School pupils was also extemporaneous, and such as a visitor can witness any day when the School is open. The answers of the pupils on *Objects*, and in *Grammar*, *Geography*, *History*, and especially *Mental Arithmetic* excited the surprise and admiration of the most experienced scholars and instructors present. The value of articles, at prices from a farthing up to several shillings each, and from a dozen to several hundred in number was stated with scarcely a moment's hesitation; as was the interest on various sums of money, and at various rates of interest, from a week to several years. Answers were given with equal promptness to questions in *proportion*, *square*, *cube root*, &c., &c. The boys answering such questions, were from ten to thirteen years of age; and some of them solved questions in proportion by *decimals* and *algebraically*, with as much expertness as in the ordinary way. Much admiration was also expressed at the answering of the pupils in Geography, History, &c.; but their answering in Arithmetic appeared so wonderful to some teachers and other visitors, that several pupils were requested to state aloud the *process* by which they attained their answers and knew them to be correct. This they did with the utmost readiness.

The public exercises of this semi-annual Examination were brought to a close on the Thursday afternoon, in the presence of a crowded audience, by a most admirable and satisfactory examination of the Students in *Hullah's System of Vocal Music*, and the distribution of the GOVERNOR GENERAL'S Prizes. The musical examination having been concluded by singing the National Anthem, the Head Master made some explanatory remarks on the course and method of instruction pursued in the Normal School; after which the Chief Superintendent explained the object of the Governor General's Prizes, and the proceedings adopted by the Board of Education to give effect to the benevolent wishes of His Excellency; that Lord Elgin highly approving of the introduction of Agricultural Science as a branch of instruction in the Normal School proposed to encourage the study of it by establishing two prizes in books—the one to the value of £5, and the other of £3,—to be given to the two students who should, at the half-yearly Examination, exhibit the best knowledge of the Science of Agriculture and corresponding ability to impart the knowledge which they had acquired; that the Board had proposed certain regulations, which had received His EXCELLENCY'S approbation, in regard to the competition and examination for the Prizes. The Professor of Chemistry and Experimental Philosophy in King's College and three Agricultural Gentlemen of high standing had been requested to act with the Masters as Examiners. The Examiners had met and agreed upon the Examination, and the value of each question in marks according to its importance and difficulty. The total value in marks of complete answers to *all* the questions was fixed at 700. Thirty-two students, including several females, had competed. The examination had been conducted on paper—eight hours in all having been allowed to the competitors to write out their answers to the questions, which, for the first time, were placed before them on their entering

the Lecture Room for examination. One of the Examiners presided to see that no competitor received any foreign assistance in the preparation of his answers. At the expiration of the time allowed for preparing the answers, they were collected, and subsequently examined and compared with great care and at the expense of much labour by the Examiners. With a view further to give effect to the intentions of His Excellency, the Chief Justice had been requested by the Board to distribute the Prizes, and his Lordship had kindly consented to do so.

The Hon. Chief Justice Robinson then rose and spoke for about twenty minutes in his own happy style of charming eloquence. He expressed his regret that the Governor General could not himself have been present to deliver the Prizes, as he was sure His Excellency would have experienced great pleasure in witnessing the gratifying results of the labours of the conductors of the Normal School, and would have added much to the interest of the occasion, as from an address which he (the Chief Justice) had heard the Governor General deliver at an annual meeting of the Provincial Agricultural Society, he was persuaded His Excellency possessed much more than a theoretical knowledge of the Science of Agriculture. The Chief Justice stated how much pleasure and profit he had experienced in attending the public Examination as far as his other duties had permitted, and in witnessing the very able manner in which it had been conducted, the practical and thorough system of instruction pursued, and the great progress which the Students had made; he dwelt upon the influence on personal enjoyment of the study of Mathematics—the Science of Demonstration—and which many might not have occasion to teach, and congratulated all present upon the advantages which the Normal School was conferring upon the whole country. The Chief Justice then adverted to the subject of the Prizes, remarking upon the importance of some knowledge of Agricultural Chemistry and Science to the Common School Teacher, the laudable competition for the Prizes which had beeen maintained by a large number of the Students. The Chief Justice read the names of the most successful competitors, and while alluding to the fact that those who had gained the Prizes were farmers' sons, and had been teachers before coming to the Normal School, his Lordship intimated that their success might in part be attributed to their practical knowledge of farming. He exhorted them to persevere in the course which they had so honorably commenced, and which would be facilitated by the valuable books now presented to them, and concluded by delivering the Prizes amidst the applause of the audience.

The Chief Superintendent made some statistical statements as to the number of Teachers that had gone forth from the Normal School at the end of each Session—that the number of Teachers now going forth was larger than that at the close of either of the two preceding Sessions, though no less than 40 out of the 148 candidates who presented themselves at the commencement of the Session, had been rejected for want of the required qualifications for admission to the Normal School. He vindicated the system of instruction in the Normal School from the imputation of empiricism and superficiality which had been made in one or two instances by showing that every part of the system, both as to the subjects or modes of instruction and conditions of admitting Students, had been adopted in accordance with the opinions and recommendations of the most experienced and profound educationists of other countries, and that the only District in Upper Canada in which such an imputation had been made under municipal sanction, not a single approved student of the Normal School had, at the time of such imputation, taught a Common School of that District, and not one of the municipal body from whom it emanated had ever attended an examination, or even a single lecture; while in other Districts where approved Teachers from the Normal School had taught, they were eagerly sought after, and their labours had given the highest satisfaction, as he showed by reading extracts of recent reports from the Superintendents of the London, Niagara, and one or two other Districts. In acknowledging the allusion to himself, in the address of the Students, the Chief Superintendent remarked that they were wholly indebted to the very able Masters of the Normal School for the instruction they had received, and the examination showed how diligently and successfully they had profited by such instruction—that in all the Normal Schools he had visited, and whose courses of study he had examined, in both Europe and America, he had never known any two Masters perform so much labour and communicate so much instruction in the same time as had been done by Mr. Robertson and Mr. Hind during the present session.

At the request of the Chief Superintendent, the Lord Bishop of Toronto concluded the exercises by pronouncing the Benediction.

N. B. The nature and extent of the examination for the Governor-General's Prizes, may be learned from the questions which will be found on the next page.

Messrs. Diamond and Pennock obtained the Prizes; but several others deserve special mention. The following is the total number of credit marks obtained by the most successful competitors:—

1. Abraham Diamond,	557	5. Ann Jane McElroy, Thomas Ferguson,	492
2. James T. Pennock,	510	6. Abel Wilcock,	478
3. Elizabeth Orr,	507	7. Archibald Campbell,	457
4. John Stewart, George Miller,	502	8. J. V. Reid,	452
		9. Jane Corbett,	451

(Conclusion of the article on the Steam Engine, from page 61.)

roads is about £2000 sterling, and of a *tender* about £500. The weight of one of these engines, supplied with its proper quantity of water and fuel, is about twelve tons: the tender, when empty, weighs about 3¼ tons; and when filled with the water and fuel its weight is seven tons. The tank contains about 700 gallons of water, and the tender is capable of carrying about 800 weight of coke or charred pit coal. This supply is sufficient for a trip of from thirty to forty miles with an ordinary load.*

The quantity of water evaporated, and passed in steam through the cylinder, supplies a major limit to the power exerted by a locomotive. Dr. D. Lardner remarks,—"In a course of experiments which I made upon the engines in use on the Grand Junction Railway in the autumn of 1838, I found that the ordinary evaporating power of these engines varied from *eighty to eighty-five cubic feet per hour*. Engines of much greater dimensions, and consequently of greater evaporating power, are used on the Great Western Railway. In the autumn of 1838, experiments were made upon these engines by Mr. Nicholas Ward and myself, when we found that the most powerful on that line, the North Star, drawing a load of from 110½ tons gross, engine and tender inclusive, at 30½ miles per hour, evaporated 200 cubic feet of water per hour. The same engine drawing a load of 194½ tons at 18½ miles an hour, evaporated 141 cubic feet of water per hour, and when drawing 45 tons at 38½ miles an hour, evaporated 198 cubic feet of water per hour."

It is very common for the Passenger Trains of the Great Western Railway to travel at the rate of 50 miles per hour, including stoppages. If the driving wheels be five feet in diameter, their circumference will be fifteen feet seven inches. To drive a train with a velocity of little more than 50 miles an hour, the engine must be propelled through a space of 76 feet per second—making about five revolutions of the wheels in the same time. As each revolution requires two motions of the piston in the cylinder, the piston must move five times backwards and five times forwards in a second; the steam must be admitted ten times per second from the steam-chest to the cylinder, and discharged ten times per second from the cylinder into the blast-pipe. Where there are two cylinders, as is the case in most locomotives, these operations and divisions of seconds must be doubled; and the motions of the slides and other reciprocating parts of the machinery must correspond. Wonderful ingenuity of man! Wonderful properties of nature! Still more wonderful resources of Him who made both man and nature!

N.B.—We had other engravings and curious additional facts prepared, illustrative of the machinery, properties and merits of the steam engine; but we cannot afford a larger space to this subject at present. The engravings we have given, and a part of the explanations of them, are taken from *Parker's Philosophy*. We purpose in our next number to explain and illustrate by various engravings the construction of another scientific, mechanical and social phenomenon of the present age—the Magnetic Telegraph.

* The enormous amount of business done on the English railroads, in carrying *goods* alone, may be inferred from the facts stated by the *London Quarterly Review* for January, that one London carting establishment, the Messrs. Pickford, collected and delivered at the London Railway Stations, *during the year* ending the 30th of last June, goods to the *average* amount of rather more than 481 *tons per day*—employing 234 Clerks, 538 Porters, 396 Horses, 82 Vans, 57 Waggons, and 25 Drays!

Normal School for Upper Canada.

EXAMINATION PAPER

For His Excellency the Governor-General's Prizes in Agricultural Chemistry, Vegetable and Animal Physiology, and the Chemistry of Food.—April 7th and 9th, 1849.

EXAMINERS.

T. J. Robertson, Esq., *Head Master of Normal School, U. C.*
H. Y. Hind, Esq., *Mathematical Master, &c., ditto.*
H. H. Croft, Esq., *Prof. Chemistry, University of King's College.*
E. W. Thompson, Esq, *President Home Dist. Agricultural Society.*
F. Neale, Esq., A.M., *Vice-President ditto.*
G. Buckland, Esq., *Sec'y Provincial Agricultural Association.*

Part I.—April 7th.

1. What is the object of the study of Agricultural Chemistry?
2. Name the forces whose effects it is the province of Chemistry to investigate; describe their mode of action, and state the distinction existing between Chemical forces and other forces influencing matter.
3. Into how many departments is the Science of Chemistry divided, and of what do they respectively treat?
4. Name the so-called organic elements; associate with each its symbol, combining number, specific gravity, and remarkable properties; also, state the names of some compound substances of which one or more of these elements form important constituents.
5. Name the so-called inorganic elements which usually enter into the composition of vegetables and animals.
6. What is meant by the terms 'adhesion' or 'heterogeneous attraction?' Into how many orders is adhesion divided? Illustrate its several orders by examples.
7. What is an acid? a salt? an alkali? Give examples of each class, and affix to each example its symbol.
8. What is Carbonic Acid? Give its symbol. How many pounds of Carbon are there in two hundred and twenty pounds of Carbonic Acid? How would you exhibit the presence of Carbonic Acid in Air? in Limestone?
9. How would you exhibit the presence of Carbon in plants? of Nitrogen in the atmosphere?
10. Exhibit the exact composition of Atmospheric Air. State its pressure on the square inch. What products are formed by the passage of lightning through the atmosphere? Give their symbols. In what ratio does the Atmosphere decrease in density as you rise above the level of the sea?
11. What is the composition of Water? What are its most important properties?
12. What is Oxidation? What is Combustion?
13. Name the inorganic acids and oxides, salts and alkalies, commonly found in vegetables, and give their symbols.
14. What is the nature of caloric? How does it effect bodies? In how many states may it exist? What measure of caloric is required to convert water into steam? Upon what circumstance does the boiling point of water depend?
15. How would you illustrate by examples the conversion of latent into sensible heat, and the contrary? Explain the phenomena of freezing mixtures. State the effect which an evaporating substance will produce upon surrounding bodies.
16. What is the cause of the development of heat during the decomposition of vegetable or animal matter?
17. Explain the phenomenon of dew. What is the dew point? State the conditions required for the formation of dew. How would you exhibit the deposition of dew? Why does dew fall sooner on some bodies than on other?
18. What is Silica? What purpose does it mainly serve in the economy of vegetables and animals? What conditions are necessary in order that water may dissolve it?
19. In what form does phosphorus exist in vegetables? What do you mean by phosphates? Name the phosphates usually found in animals and vegetables. In what state does phosphorus exist in the inorganic world?
20. What remarkable property is common to potassium and sodium?
21. State into how many parts a vegetable may be divided, with respect to its structure, and name them.
22. Trace the course of the sap; mention the changes which are supposed to take place when it arrives at certain parts of the plant.
23. What are the functions of the roots? of the leaves? How do the trunks of dicotyledonous vegetables increase in dimensions?
24. State the sources from which plants derive their organic elements, and give the symbol of each compound you may mention.
25. State the distinction between proximate and ultimate principles, and name the proximate principles found in any considerable quantity in vegetables.
26. What are isomeric compounds? Give some examples which occur in vegetable chemistry.
27. Name those proximate principles which are common to plants and animals.
28. Illustrate the composition by means of symbols: first, of grape sugar; second, of cane sugar; third, of gum; fourth, of starch.
29. Into what proximate principles may grape sugar be resolved when it suffers decomposition?
30. Explain the transformation, by means of symbols, which takes place when grape sugar is in part converted into alcohol, and then into vinegar.
31. From what sources are the inorganic elements of soils originally derived?
32. What elements are essentially necessary in the composition of a fertile soil?
33. In what state must all inorganic elements be, before they can enter into the composition of vegetables?

Part II.—April 9th.

34. What is the object of ploughing the soil? Explain the difference between surface ploughing and subsoil ploughing.
35. What is the object of draining? State the various effects which careful ploughing, subsoil ploughing, and thorough draining may be supposed to produce upon the condition of the soil.
36. Name the depth, breadth, and width of the drain generally constructed for the purpose of thorough draining—draw a sectional diagram of two or three different kinds of drains. How far apart would you place your drains—1st, in heavy land; 2nd, in light land; and how would you place them in draining a hill side?
37. Name the inorganic elements which enter largely into the composition of the cerealia.
38. State the composition of common granite rocks, and name all the substances which a decomposed granite rock may be supposed to give to the soil.
39. How may the decomposition of the mineral substances in a soil be accelerated? What is clay, and how would you accelerate the decomposition of clay silicates? What object would be secured by such decomposition?
40. State the various reasons which induce the application of manures to the soil.
41. Illustrate by examples the various modes in which, 1st, vegetable; 2nd, animal; 3rd, mineral manures may fertilize the soil.
42. Why is farm-yard manure a good fertilizer? What is the character of the fluid portion of farm-yard manure?
43. State the nature of the change which takes place upon the decomposition of urea. Why is the resulting compound beneficial to vegetables? Give its symbol. What peculiar property does it possess, and how would you render it serviceable?
44. How would you accelerate the decomposition of organic matter in the soil? What purpose is served by the decomposition of organic matter?
45. Name the compounds which are the ultimate results of the decomposition of organic matter.
46. Explain the principles upon which the benefits arising from a proper rotation of crops are dependent.
47. What inorganic compound does milk contain in abundance? State the source of that compound, and the purposes it serves in the animal economy. With what substance would you manure your pastures in order to increase its quantity in the milk?
48. What is the composition of gypsum? of common salt? of lime? and for what purposes would you lime, 1st, heavy clay land containing but little carbonate of lime; 2nd, peaty soils.
49. State the composition of a marl.
50. What is meant by the fallowing of land? For what purpose do you fallow land?

51. What purposes do the proximate principles found in the vegetables which contain nitrogen serve in the animal economy?

52. What purposes do non-nitrogenized proximate principles serve, and in what form are they chiefly given off by the animal?

53. Give a list of the nitrogenized and chief non-nitrogenized proximate principles found in vegetables.

54. What inorganic substances enter largely into the animal frame?

55. Trace the course of the food from the mouth to the time of its mingling with the blood.

56. Trace the course of the blood from the left auricle of the heart through the animal frame.

57. State the nature of the change which takes place in the blood when in the lungs. In what other parts of the system does a change take place in the chemical composition in an inorganic portion of the blood? Illustrate that change by means of symbols.

58. What peculiar property does the salivia possess, and what purposes does it serve in the animal economy?

59. Upon what order of adhesion is the effect of alcoholic liquors supposed to be dependent?

60. What is the theory of the transformation which takes place when milk is brought in contact with an animal membrane, as in the curding of milk?

61. Explain the reason why meat well boiled in large quantities of water is not nutritious. And how would you prepare the strongest soup from a given quantity of meat? In what way would the mode of preparation differ if you prepared the meat alone for consumption?

62. Why is salted meat deficient in nutritious qualities?

63. From what source do the young of mammiferous animals derive their bony structure? Express the chief proximate inorganic principles in symbols.

64. Upon what four conditions is the healthful flow of the various aqueous currents in the animal body and in the vegetable dependent?

65. What is the primary cause of 'colds,' and of that determination to disease which has of late years been exhibited by many vegetables, especially in the tubers of the potato?

66. What remedy, in part, would you suggest with reference to vegetables?

N. B.—An oral Examination to take place after the time for answering the foregoing questions has elapsed, for the purpose of ascertaining the relative knowledge of the candidates on the subject of Practical Agriculture, as well as their aptitude to communicate a knowledge of Agricultural Chemistry, in all its branches.

ADDRESS OF THE STUDENTS

On leaving the Normal School for Upper Canada, at the close of the Winter Session, 1848–9, *to* Thomas J. Robertson, *Head Master, and* Henry Y. Hind, *Mathematical Master, Esqrs.*

Gentlemen,—We, the Students, who have been during the last five months under your tuition, impelled by the pleasurable feelings which the recollection of our past intercourse with you in this Institution is so calculated to inspire, and actuated by no other considerations than those arising from such spontaneous emotions, find it impossible, at this moment of separation, to refrain from giving expression to those sentiments of esteem entertained towards you by every individual of our number; an esteem which will be consistent with our future lives; and resulting not more from your uniform kindness and urbanity towards ourselves, and the indefatigable assiduity and successful talent evinced in imparting your instructions, than from the ardent zeal you have manifested, and still continue to manifest, for the dissemination of the blessings of education throughout your adopted country.

It is true, that previous to the enactment of the Statutes now in force for the promotion of popular scholastic instruction in Upper Canada, education was advancing with a pace, which, compared with its progress in some countries, was far from being contemptible. But the enactment of those Statutes gave it a new impulse, which has been exceedingly augmented by the elevation to the head of the Educational Department of the Reverend Dr. Ryerson, the present excellent Chief Superintendent of Schools;—a man whose energy, talent, intelligence, devotion to the cause of popular enlightenment, and extended philosophic views, render him eminently fitted to discharge the functions of that office; while his catholic liberality of sentiment, and strenuous and long-continued exertions for the promotion of religious principle, form a sure guarantee that he will not be influenced in the discharge of those important functions, either by latitudinarianism on the one hand, or by denominational prejudice on the other.

While one of you, Gentlemen, has brought from the Mother Country a thorough knowledge of the machinery, didactics, and course of studies of the Irish National Schools; the other has been enabled by extensive foreign travel, and by long acquaintance with the modes of teaching in foreign countries, to import from Germany, from Prussia, and from France, the educational improvements of continental Europe.

All these have been carried into operation as far as practicable, not only in this Institution, but in the Model School attached to it. And here we would express our sense of the courtesy we have experienced from the teachers of this latter establishment, and from Mr. Townsend, our accomplished instructor in vocal music; as well as the high gratification afforded us by the rapid proficiency of the pupils, and the thoroughly intellectual nature of the instruction given in the Model School. Indeed, in the Model School, superficiality is eschewed as far as compatible with the tender ages of the pupils: nor do the acquisitions attained in the Normal School partake in any degree of an empirical character; the students being required to deduce their practical operations from the most rigorous demonstrations of theory. Thus a solid basis is laid for a future superstructure of self-cultivation; an object as dear to individuals of literary predilections, as it is of high utility to the public, by enabling the teacher of the primary school to discharge his duties with more efficiency than has hitherto been general in North America.

A sound physical and moral education, combining intellectual development and industrious habits with the cultivation of religious feeling, is the only source of the permanent wealth and power of nations; the true safeguard of property, of order, of freedom; one of the agencies, in all probability, destined by the Almighty Governor of the universe to effect the moral and social amelioration of humanity.

It is therefore a source of satisfaction that there is an increased disposition among parents to aid the teacher in the discharge of his arduous duties; that there is a diminution of those miserable cabals and dissensions arising from school matters, which heretofore distracted so many neighbourhoods; that the practice is less prevalent than formerly, of forming selfish and unwarrantable designs upon the teacher on his entrance into a Section, designs conceived not only by non-official persons, but not unfrequently by trustees, and generally resulting in a change of teachers, at once detrimental and unnecessary; and that the preposterous custom is partially abandoned, of withdrawing children from the schools, on account of some frivolous pique, perhaps unfounded, entertained by the parent against a neighbour, a trustee, or the teacher. By perseverance and a further advancement in this excellent and most necessary reformation, parents would confer most solid benefits on their offspring.

We also hail with delight the efforts that are being made by individuals, by Municipal Corporations, and by the Government, for the expansion and elevation of the popular mind; and as subsidiary to this, to induce a more liberal expenditure for the maintenance of primary schools; to originate a better system of School Architecture; and to disseminate a knowledge of some subjects to which the generality have hitherto been comparatively strangers, particularly Chemistry,—a science of so vast importance to an agricultural population.

The immediate realization of these objects is indeed not to be expected. The desirable consummation must be the work of time. Nevertheless, Gentlemen, the tendency of your exertions in the position you occupy, indicates its ultimate and not distant accomplishment. Be it ours to copy, and if possible to improve upon your example. And now that we are about departing for various localities, to carry into effect your precepts and expositions, we would renew the spontaneous assurance, that time shall not obliterate those favourable impressions with which you have inspired us. Adieu!

Normal School, April 12th, 1849.

(Signed by 75 Students.)

Science and Practical Arts.

THE STEAM ENGINE.

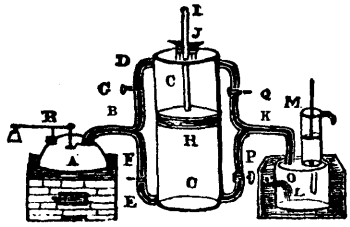
WITH ILLUSTRATIONS.

(Concluded from page 45.)

We resume and conclude our remarks on the Steam Engine. We have explained the formation of steam and stated various facts respecting its power at different degrees of temperature. We have also explained and illustrated the application of that power in the working of WATTS' Double-Acting Condensing Steam Engine—stating the four essential improvements in its construction for which the world is indebted to that great Inventor and Engineer.

We will now add a few illustrations and statements for which we had not room in our last number. To show more clearly the connexion and working of the principal parts of the engine, we introduce the following figure No. 1, which represents the boiler, the steam-pipe, the cylinder and piston, the eduction-pipe, condenser, air-pump, &c.

(Fig. 1.)



In this figure, A represents the *boiler*, connected with the *cylinder* C C, by the *steam-pipe* B; which has two *branches*, D, E, communicating with the cylinder, the one above, the other below the *piston* H. Each branch of the *steam-pipe* has a valve—the valve F opening to the cylinder C *below* the piston H, and the valve G opening to the cylinder *above* the piston. F is called the *lower steam-valve*, and G is called the *upper steam-valve*. These are opened and closed alternately by levers (L L, fig. 2) raised or depressed by projections attached to the piston-rod of the pump. K is the exhausting or *eduction-pipe*, having two *branches* and *valves*, like the steam-pipe, and the valves are opened and closed by the same machinery. P is called the *lower exhausting valve*, and Q the *upper exhausting valve*. By the eduction-pipe, through these valves, the steam passes from the cylinder to the condenser as the piston ascends and descends.* L is the condenser, and O a stop-cock for the admission of cold water to promote the sudden condensation of steam from the cylinder. M is the air-pump, so called, because it removes from the condenser not only the water, but also the air, and the steam that escapes condensation. In fig. 2, (note,) F represents the air-pump, which conveys the water, &c., (heated by the steam) from the condenser into the hot-well I, whence it is conveyed by the hot-water pump K back to the boiler. R (fig. 1) is the safety valve.† When the valves are all open, the steam issues freely from the boiler and circulates through all parts of the machine, expelling the air. This process is called blowing out, and is heard when a steamboat is about starting. In the working of the engine, the steam-valves F and G, and the exhausting-valves P and Q are alternately opened and closed. When the valves F and Q are closed, and G. and P. opened, the steam from the boiler rushes at D into the upper part of the cylinder C, and presses down the piston H. At this moment, the levers (L L, fig. 2) attached to the pump-rod close the valves or stop-cocks G and P, and open F. and Q, when the steam flows into the cylinder at E, and rushes from above the piston through the eduction-pipe K into the condenser L. Thus, as the valves G. and P and F and Q are alternately opened and closed, the steam passing from the boiler drives the piston alternately upwards and downwards, thereby producing a regular and continued motion. The piston is connected with one end of a working-beam by a rod called the piston-rod (see fig. 2), and the other end of the working-beam is connected with the machinery to be worked, the whole of which is moved by the motion of the piston. Thus an engine of great power is obtained.

It would exceed our limits and be foreign to our design to attempt a minute description of the various parts of the steam engine, much less to explain their construction; our object is to explain and illustrate to the general reader the principle on which the power of this wonderful machine is produced and applied, and to state some facts and phenomena connected with its operations. In the construction of the steam engine there is a relation between its different parts—for example, between the *evaporating power* of the boiler and the *magnitude of the surface* exposed to the action of

* The *steam* and *eduction pipes* are made in various forms, as also the *valves:* but the principle of action is the same in them all. For convenient comparison and reference, we here repeat the illustration, Fig. 2, which we gave in the last number:—

WATT'S DOUBLE-ACTING CONDENSING STEAM ENGINE.

Fig. 2.

A boiler.

B steam-pipe.

b steam-cock.

C cylinder.

D eduction-pipe.

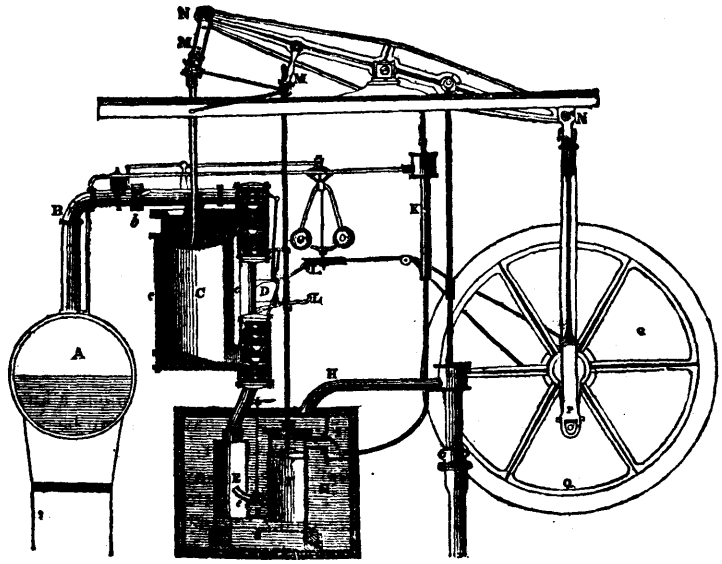
E condenser.

e injection-cock.

F air-pump.

G G cold-water cistern.

H cold-water pump.



I hot-well.

K hot-water pump.

L L levers to open and shut the valves in the steam and eduction pipes.

M M aparatus of parallel motion.

N N working-beam.

O O governor.

P connecting-rod and crank.

Q Q fly-wheel.

N. B.—For a more full explanation of this figure, see the *Journal of Education* for March, page 45.

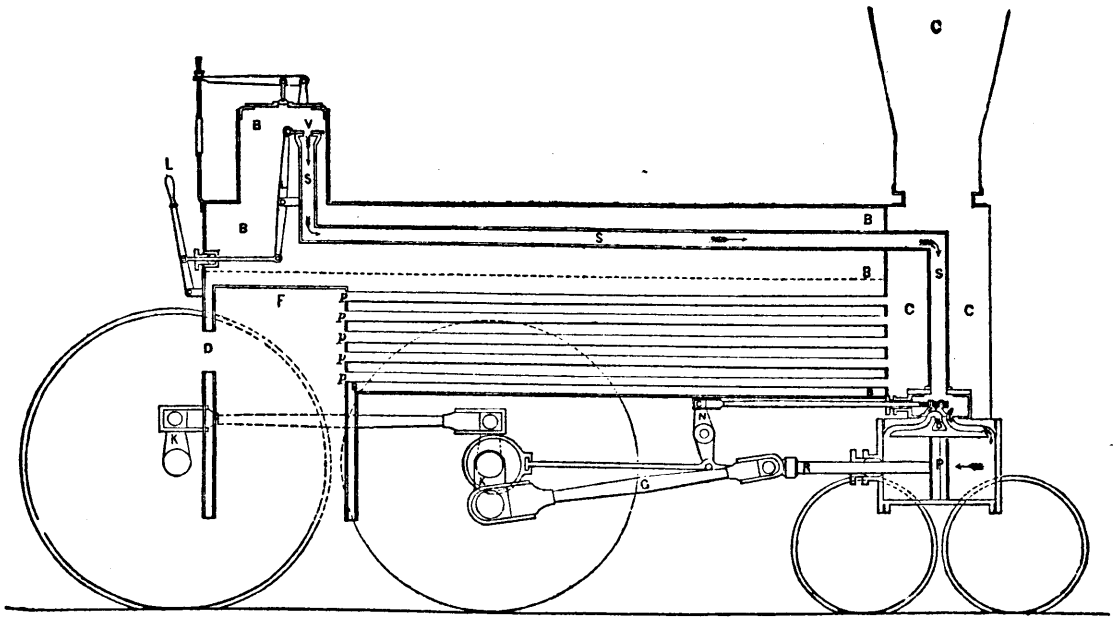
† The safety-valve R is connected with a lever whose fulcrum is at one end and the weight at the other. The valve opens outwards, and is fitted to an aperture in the boiler, so as to be steam tight. It is pressed down by a weight, the amount of which is regulated by the maximum pressure to which it is intended to limit the steam. Thus, if the valve be a square inch, and if it were intended to limit the steam to 20 lbs. per square inch above the pressure of the atmosphere, the valve would be loaded with a weight of 20 lbs. Suppose the distance between the *fulcrum* and the *weight* to be four times as great as the distance between the *valve* and *fulcrum*, it would require a *weight* of only 5 lbs. The weight is usually made to slide upon the lever (like the weight of a steelyard) so as to vary from time to time the limiting pressure of the steam. Instead of a weight, a spring steelyard, or spiral spring, is frequently used to determine the pressure on safety-valves. This is generally the case in locomotive engines. When the pressure of the steam within the boiler is greater than the weight on the safety-valve, the valve is raised up, and the steam rushes through the aperture under the valve, and thus removes the danger of bursting the boiler.

the furnace, also between the magnitude of the *cylinder* and that of the *condenser*, &c. Engine builders allow from ten to eighteen square feet of heating surface in the evaporation of every cubic foot of water per hour; and within the same wide limits of from ten to eighteen square feet of heating surface in the boiler do engine-makers vary for every nominal horse-power of the engine. They also allow about 22 square inches of *piston* surface per nominal horse-power, the piston being supposed to move at the rate of 200 feet per second.* The evaporation of a cubic foot (or about ten gallons) of water, and the consumption of ten lbs. of bituminous coal per hour, are estimated for each horse-power of the engine. Some estimates, however, are half a cubic foot of water per hour for each horse-power of the engine. These variations in the estimates, or rather conjectures, of engine-makers show how little certainty has been attained in the constructions of the steam engine, and of how much improvement it is therefore susceptible.

The foregoing remarks relate to double-acting condensing steam-engines. In steamboats the fly-wheel is generally dispensed with—being superseded by the paddle-wheels; nor is there any cold-water cistern in marine steam engines, but the capacity of the condenser is increased to half that of the cylinder, instead of being one-fourth, as in engines for manufacturing purposes.

The *Locomotive engine* is a high-pressure steam-engine, mounted on wheels, commonly six wheels, and used for drawing loads on railroads, (and latterly on other level roads.) It is usually accompanied by a large wagon, called a *tender*, in which fuel and water, used by the engine are carried. We have heretofore stated that a high-pressure engine has no condenser, costs less, occupies less space, requires no apparatus for parallel motion, and is much less complicated than the condensing steam engine. The steam of a high-pressure engine, after having moved the piston, is let off into the open air, and of course against the weight of the pressure of the atmosphere. In the condensing steam engine, a vacuum, or nearly a vacuum, is produced in the division or chest of the cylinder whose exhausting-valve opens the passage to the condenser, so that the piston, in ascending and descending, has little other than the resistance of friction to overcome; but as no such vacuum is produced in the cylinder of a high-pressure engine, the piston has the additional resistance of the pressure of the atmosphere to overcome every time it ascends or descends. To overcome this resistance requires a pressure of steam equal to that of the atmosphere, which is 15 lbs per square inch; and the only part of the steam pressure which will be available as a moving power, is that part by which it *exceeds the pressure of the atmosphere.* Hence in a condensing engine, steam at a pressure of 10 lbs per square inch produces an *effective* mechanical force equal to that of steam at a pressure of 25 lbs per square inch in a non-condensing engine. In working the latter, therefore, it is necessary to have steam of a much higher pressure than in working the former. Hence the former is called the *low-pressure* engine, and the latter the *high-pressure.* There is, of course, less danger in working the former than the latter, and less expenditure of fuel and water in proportion to the *effective* power obtained; but the high-pressure engine being light and small, as well as comparatively cheap and simple in construction, is alone adapted to locomotion. The following (Fig. 3) represents a side view of the internal construction of a locomotive steam engine:

SECTION SHOWING THE INTERNAL CONSTRUCTION OF A LOCOMOTIVE STEAM ENGINE.—(Fig. 3.)



D the door thro' which the fuel is introduced.—

F the fire-box, or furnace.

B the interior of the boiler, in which the water stands at the height, indicated by the dotted line.

p p p p the tubes which conduct the smoke and flame of the fuel through the boiler to the chimney C C. Thus none of the heat is lost, but it is communicated to the remotest part of the boiler; as large a surface as possible is exposed to the heat—the tubes being all surrounded by water.

S S S the steam-pipe, open at the top V S, having a steam-tight cock, or regulator V, which is opened and shut by the lever L, extending outside of the boiler, and managed by the engineer, in starting or stopping the engine at pleasure.

The boiler is closed on all sides, all its openings being guarded by valves. The apparatus of safety-valves and other appliances for the management of the power produced by this machine, are the same in principle, though differing in form, with those used in other steam engines, and are not represented in the above figure. The operation of the machine is as follows:—The steam is generated in great abundance in the boiler, and being unable to escape, acquires a high degree of elastic force—sometimes to the pressure of 40 or 100 lbs on a square inch. To put the engine in motion, the engineer opens the valve V by the handle L, when the steam rushing into the pipe S S S, passes in the direction of the arrow, and enters the valve-box at X. There a *sliding* valve, which moves at the same time with the machine, opens for the steam a communication successively with each end of the cylinder below. Thus, in the figure, the entrance on the right hand of the sliding-valve is represented as being open, and the steam follows in the direction of the arrows into the cylinder, where its *expansive* force will move the piston P in the direction of the arrow. The steam or air on the other side of the piston presses out in the opposite direction, and is conveyed by a tube (not represented in the figure) passing through C C into the open air. The motion of the piston in the direction of the arrow causes the levers N N to close the sliding-valve on the right, and open a communication for the steam on the other side of the piston P, where it drives the piston back towards the arrow, at the same time affording a passage for the steam on the right of the piston to pass into the open air. Motion being thus given to the piston, it is communicated by means of the rod R and the beam G to the cranks KK, which, being connected with the axle of the wheels, cause it to turn, and thus move the machine.

The locomotive engine is an ingenious and exquisite machine, being composed of 5416 pieces, and put together as carefully as a watch.* The cost of a locomotive engine on the English rail-

(For conclusion of this article see page 57.)

* LARDNER on the Steam Engine. The general rule laid down by WATT for estimating the power of a steam engine is as follows:—"Multiply together the area of the piston, the length of the stroke, the number of strokes per minute, and the constant number 10; divide the product by 33,000. The quotient is the horse-power."

* London *Quarterly Review* for January, 1849.

Literary and Scientific Intelligence.

Changes in the Oxford University Examinations.—Publicity has been given to an account of the changes in the University examinations which are to be submitted to Convocation at Oxford on the 20th of March. The mean feature of the alteration is the division of the "great go" into two examinations, to be undergone respectively, "between the eighth and twelfth terms, and between the thirteenth term" of each candidate. The first and second examinations continue to favour classical scholarship. The third is divided into four schools—

"The first is the school of 'Literæ Humaniores,' including the range of subjects which fall under that designation in the present system; the second, of 'Mathematics and Physics studied mathematically;' the third, of 'Natural Science;' and the fourth of 'Modern History and the Cognate Sciences.' Under this latter category are comprehended Modern History down to the year 1789; Jurisprudence in general, and the Laws of England in particular; Moral Philosophy, as treated in English and by English authors, and the Philosophy of Language." "The student must pass in every instance through the school of Literæ Humaniores, and through one at least of the two others, though not necessarily in the same term. Divinity and Logic form integral parts of the examination in the first school, and will 'have due weight in the distribution of honours.' It is moreover provided, that honours shall not be awarded in any school to any candidate whose name has not appeared in some class in either school in the first public examination, nor in the school of Literæ Humaniores or of Mathematics to any candidate whose name has not appeared in the corresponding school in the first public examination."—[London Watchman.

Statistics of Public Libraries in the World.—The number of volumes in the Public Libraries of Germany is five and a-half millions; of France, five millions; Great Breat Britain, two and a-half millions; Russia one and a-half millions; United States, one and one-fourth millions; Spain, one million. France has 241 Public Libraries; the United States 182—of these 43 contain over 10,000 vols. each, 9 over 20,000, and only two over 50,000.—[From a Report to the Smithsonian Institute, January, 1849.

British Museum.—From a Parliamentary return, it appears that at the end of 1848, there were in the British Museum 435,000 printed volumes 10,221 maps, charts, &c., 20,626 volumes of MSS., 2946 rolls of various kinds, 23,772 Charters, 208 MSS. on reed and bark, 55 papyri, and 851 Seals and Impressions. The number of volumes in the Bodleian Library at Oxford is about 220,000, and the number of MSS. 21,000. The present British Library ranks, in number of volumes, with the libraries of Vienna, Berlin, and Dresden, and is inferior only to the two great libraries of Munich and Paris.

The British Museum Letter A in Sixteen Folios.—The principal keeper of the printed books in the British Museum is Mr. Panizzi; a gentleman of great attainments, versed in foreign languages, and fairly acquainted with the English literature. To him, by right of office, the compilation of a new Alphabetical Catalogue of the books of the British Museum has been intrusted. He has gone, we must say, willingly to work, —thought night and day about his subject,—looked at every catalogue for hints,—laid down rules for his assistants to follow,—divided and subdivided works,—introduced references and cross references beyond human ingenuity to follow up,—and after ten long years of labor has produced letter A in sixteen folio volumes for the *convenience* of readers attending the Reading Room of the British Museum!—[Athenæum.

Joseph Hume's Library.—The Parliamentary Library in Bryanstone-square is a perfect phenomenon in extent, methodical arrangement, and accessibility as to what is inside, as well as to the outside. Every blue book, every stray leaf of every vote paper, and every scrap of a return, classified, indexed, and annotated in the veteran's own hand for forty years back; so that there is not a single circumstance which has occupied the Legislature in any shape during the whole of that period upon the record of which Mr. Hume cannot place his finger on the instant.—[London Correspondent of the Liverpool Albion.

Stowe Library.—The auction sale of the princely Library of the Duke of Buckingham, at Stowe, realized £10,355 7s. 6d.

Important Discovery in Voltaic Electricity.—Mr. Alfred Smee, the surgeon to the Bank of England, and inventor of the battery which bears his name, has announced important discoveries in animal electricity. By a test which he terms electro voltaic, he has discovered that the terminations of the sensor nerves are positive poles of a voltaic circuit, whilst the muscular substance is the negative pole. The sensor nerves are the telegraphs which carry the sensation to the brain, and the motor nerves carry back the volition to the muscles. The brain to consist of five distinct voltaic circles, which, upon theoretical grounds, he believes to be sufficient to account for all mental phenomena. Mr. Smee has succeeded in making artificial electric fish, and artificial muscular substance. Should these researches be fully confirmed by other investigators, they must be regarded as the most important physiological discovery of modern times.—(Jerrold's Weekly News.

Personal Appearance of Dumas and Lamartine.—The Paris correspondent of the *N. Y. Tribune* says:—"I saw Dumas a few evenings since, sitting in a box at the Italian Opera. He is a liquid-eyed, voluptuous West Indian—with all the languid orientalism of a Creole in his mien. The luxurious appointment of the dress circle at the Italian, was a fitting frame for him. Opposite sat Lamartine, grave, sweet, and graceful. He looks older than his portraits generally make him. He is really 59 years old. His hair is grey—his head large, his brow grandly arched, and his eyes and nose of a generous greatness, finer than I find in the portraits. The mouth is large—the lips somewhat fallen, and it is here, about the mouth, that a faint feeling of vanity is visible. His manner is that of a man accustomed to homage—which was offered him this time, by a lady and two gentlemen who were in constant conversation with him. The party rose and left before the conclusion of the Opera."

Improvement in Locomotives.—James S. French, Esq., of Virginia, has invented a plan by which locomotives, with cars attached, may be made to traverse a rail laid over the undulations of an ordinary road, without danger or difficulty. As the plan has not yet been made known to the public, we cannot judge of its practicability, but merely remark that the end desired is produced by an apparatus which gives the engineer power to control the adhesion of the wheels upon the rail, at pleasure; which was the difficulty to be overcome, and hitherto thought to be insurmountable. This has been a subject of study and experiment since the days of Sir Richard Philips, and if the above invention proves successful, it will be another important triumph of science, and an evidence of the rapid progress of the age.—[N. Y. Teachers' Advocate.

A *New Application of Air.*—A patent has lately been taken out in England, for an apparatus, by which the brakes of carriages are pressed against the wheels, by the expansive power of Air. The force is obtained by means of a piston, moved in a cylinder, either by air compressed in a reservoir, and allowed to escape suddenly through the valve against it, or from exhausting the cylinder of air behind the piston. In this way, it is said, a force is obtained of fifty pounds to a square inch. It seems to be altogether an ingenious affair, even in this age of novel inventions, and will undoubtedly be very useful for the purpose of suddenly checking the speed of the rail road carriages.—[Ibid.

To Transfer Engravings to White Paper.—Place the engravings for a few seconds over iodine vapor. Dip a slip of white paper in a weak solution of starch, and, when dry, in a weak solution of oil of vitriol. When dry lay the slip upon the engraving, and place them for a few minutes under a press. The engraving will thus be reproduced in all its delicacy and finish. The iodine has the property of fixing on the black parts, or the ink of the engraving, and not the white.—[Ibid.

The Manufacture of India Rubber Goods.—At Harlem, near New-York city, there is an India Rubber manufactory, where about one hundred and fifty women and fifty males are employed, and where military equipments are made in no small quantities. The raw rubber is first cleanly washed, and after being dried is ground between two large cylinders under an immense pressure, heated by steam, heated so hot that the rubber looks as though it were burning. While this is grinding, a preparation of turpentine is mixed with it to dissolve the rubber. The rubber comes from the roller a black mass, which is transferred to rollers of a still heavier pressure, where it is ground again under a strong heat; thence it goes to a third roller to be heated ready to be put upon the cloth; this is done by a powerful set of rollers. The rubber thus prepared is put upon the rollers and distributes itself evenly, at any thickness desired; the cloth is then put upon another roller that passes under the rubber, which, under great pressure, is forced into and through the cloth; no matter whether silk or the stoutest sail duck, it goes through. A coat is put on the other side in the same way, and no power can separate the mass after that. The cloth is then taken to the room where it is made into an infinite variety of goods to which it is adapted. These goods are cut out by patterns, and after the edges are covered with rubber cement, they are folded together and rubbed down closely, and soon become so closely fixed that any part will separate before the seams; there are in fact no seams; all is rubber, without a particle of other fastening. After they are all fastened, the whole article is covered with powdered sulphur and taken to be cured. This is done by placing them upon an iron railroad that passes into a large cylinder, where

they are subjected to the action of steam at a high temperature, which cures them, and completes an article that is affected by no temperature, and which will outwear iron itself. The goods taken out of the heater are boiled in strong potash lye and then washed, which leaves them ready for sale. The sulphate of lead and sulphuric gases are also used to cure or vulcanize the rubber. The goods made by this machinery are elegant, and the operation of making them is very simple, and yet complete.

Gutta Percha.—The discovery of Gutta Percha promises to be one of the most important which has been made in the present century. Already articles of almost every variety, both useful and ornamental, have been manufactured from it. At the proceedings of the British Association, recorded in the Athenæum, No. 1086, a splendid communion dish and service were shown, composed of a preparation of this substance. The following is a list of some of the principal articles manufactured from it by the American Gutta Percha Company, whose office is at 139 William Street, in this city :—Machine bands, gas and water pipes, saddle and harness of all kinds, Trays, Fancy Boxes, Tables, Water-Proof Roofing, Inkstands, Drinking Cups, Boots and Shoes, Air-tight Coffins, Powder kegs, for the transportation of powder in water, Soda Fountains, Gasometers, &c. To a person unacquainted with the nature of this truly singular substance, it will appear incredible that so many articles as the above catalogue mentions, should be fabricated from a single material, but a visit to the above named establishment will convince them of its truth.

Gutta Percha is the concrete juice of a tree abounding in Borneo, and is obtained periodically by the Malays, by tapping the tree. Its introduction as a useful article of commerce is said to have been entirely accidental, and the first sample was transmitted to the Secretary of the British Association in 1843. The following is the manner in which it is prepared :—The rough and crude blocks of the substance are cut into slices and soaked in hot water. These are then placed in a mincing cylinder, and afterwards in a masticating machine, when they undergo the same process as the pulp of rags of which paper is made. It is then formed into sheets by being pressed through rollers. Out of these sheets are stamped driving bands for machinery, soles for shoes, boot-heels, and a multitude of other articles. This invention promises to be of very great ability in forming the sheaths for submarine telegraphs. But the most singular, and perhaps we may say important, purposes to which it has been applied is the construction of an *acoustic telegraph*, or, as it is called by its inventor, the Telakouhanon. This is a species of speaking trumpet, consisting of a long tube extending to any distance, at the pleasure of the maker; by means of which a whisper may be heard at the distance of three-fourths of a mile. In manufactories, hotels, and even in private houses, this will prove an invaluable acquisition since branch tubes may be affixed to convey the sound to any apartment in the building. In order to attract the attention of the person to whom the mission may be addressed, a whistle is attached at either end of the tube. An operator, who exhibited this curious instrument a short time since at London, placed one end of a tube of this description in the embochure of a flute, and blowing through the other end, by another person's adapting his fingers to the holes of the instrument, "God save the Queen" was played with perfect correctness.—[N. Y. Teachers' Advocate.

French Sewing Machine.—This machine, to which we have before alluded, is the invention of an humble artisan, who has a great mechanical genius, and who has been engaged for thirty years in the perfection of his invention. He received a patent for it in France a few years ago, and it is said that for more than twenty-five years, he sought in vain to make it work, and that the thought flashed all at once upon his mind regarding its true and perfect principle. The machine was introduced into London some time last year, and has attracted much attention in that city. It is very cheap ; some are sold for twenty dollars, and the price varies from that to thirty. The machine is fixed on a table, and is a very small box. It is worked by a treadle, and every movement of the foot produces a corresponding action in the needle ; so that three hundred stitches can easily be made in a minute. The hands are merely used to guide the material being sewn, and by turning a screw, the stitch is easily varied. The machine will sew, stitch, and forms cords and plaits. The stitch is the tambour or crotchet stitch. The whole value of the invention consists in making machinery to do what was hitherto done by the fingers, and thus resolving a problem supposed impracticable. The beauty of this machine is, that it can work button holes and embroider. M. Magnen, who exhibited in London, wore an entire suit worked by it, consisting of coat, pants, vest and all their appurtances. To France belongs the credit of this invention. M. Thimonnier is the name of the inventor, and his fame will go down to posterity with that of Jacquard.

Tunnelling the Alps.—The Tunnelling of the Alps has been commenced. The *Gazette de France* says that the engineer, Mans, commenced operations with his machine, perforating a rock to the thickness of 48 1-2 centimetres, in thirty-five minutes. If this process was applied to the perforation of Mont Cenis, it is calculated that by working at the two opposite ends, three years would be sufficient to complete the work, thus opening a free intercourse between Italy and the Continent.

A Fly's Speed.—By fair comparison of sizes, what is the swiftness of a race-horse clearing his mile a minute to the speed of the fly cutting through her third of the same distance in the same time ? And what the speed of our steaming giants, the grand puffers of the age, compared with the swiftness of our buzzers, of whom a monster train, scenting their game afar, may even follow patridges and pheasants on the wings of steam in their flight as friendly offerings ?—[Episodes of Insect Life.

Extreme Divisibility of Matter.—The following is interesting : —"A grain of gold can be beaten out so as to occupy a surface of 50 square inches; and this leaf can be divided into half a million of visible parts. 124,500 such leaves would be but one inch in thickness. The particles of light are so infinitely small, that though they impinge on our organs of vision with a velocity of 192,000 miles per second, no sensible inconvenience results. A grain of cochineal dissolved in three gallons of water imparts to each drop a coloring matter equal to the one hundred and thirty thousandeth part of a grain. A block of talc, less than an inch in thickness, has been divided into more than a million distinct laminæ."

Scientific Prophecy.—About nineteen years ago, Mr. Halt, of Wilton, Conn., then a remarkably good student in his Collegiate course, was suddenly deprived of his reason and memory. In those circumstances, his father, Rev. Mr. Halt, sent him to Hartford ; but finding no relief, he sent him to Dr. Chaplin, of Cambridge, Mass. The Doctor said there was no relief for him at that time,—but at the age of thirty-six or seven there would be a change ; that the brain was too much expanded for the cranium, and there would at that age be a contraction, which would enable it to act healthfully. His anxious father saw their hopes peremtorily deferred for nineteen years. That time has recently expired, and to their great joy the prophecy is fulfilled. The man began to inquire for his books, as if he had just laid them down, and resumed his mathematical studies where he left them. There was no trace on his mind of this long blank in his life, or of anything which has occurred in it, and he did not know that he was almost forty years of age. The circumstances of greatest interest is, that whereas he went into this state of derangement in deep religious anxiety, he came out of it with a bright Christian hope, which had been obtained without the knowledge of his friends a short time before.

King's College, London—Popular Lectures.—The Council of this College have recently appointed Professors whose duty it is to give evening Lectures, open not only to regular students, but to all gentlemen who may feel disposed to attend, and to many men who are prevented by their avocations from indulging in literary and scientific pursuits during the day time. The opening Lecture was delivered by the Principal, the Rev. Dr. Jelf, "On the Relation which Scientific Pursuits bear to Religion."

New Steam Agent—French Academy of Sciences.—A new system of steam-engines submitted by Boutigny, eminent in natural philosophy, engages the attention of the Academy, and all persons directly concerned in locomotives. Boutigny asserts, from numerous experiments, the existence, before unknown, of a *fourth* physical state of bodies, different from the solid, liquid and gaseous, and to which he attaches the epithet *spheroidal*. He attempts to explain, by means of the spheroidal state which water assumes in over-heated boilers, "those fulminating explosions of which the occult unknown cause frustrates all the precautions taken to prevent those formidable phenomena." He conceived that water, in the spheroidal state, could be employed at once as a precious auxiliary on board steam-vessels, and that, by its agency in this way, the power of machines might be doubled momentally, and this without any change in the present form of the engines. He thinks he has invented a new and precious *moteur*, and he averts all danger of explosion. A skilful engineer has constructed for him, on the principle of his discovery, an engine of one horse-power, of which the size of the boiler is not larger than may be easily put in the pocket ; two other engines, one of two horse-power, and another of four, are being built in Paris ; a third, of four hundred horse-power, is about to be constructed in England. The quantity of coal used in a given time for a given purpose will be less than in the old engines ; the new will occupy less space in vessels—leaving more for passengers and merchandise ; and they may be adapted perfectly to vehicles running on ordinary roads. Boutigny adds, that the experiments with the engines, so far, are entirely satisfactory and conclusive.—[Paris Correspondence, Littell's Living Age.

The London papers announce the death of the exquisite Quaker Poet, Bernard Barton.

Journal of Education

FOR UPPER CANADA.

The following ADDITIONAL OPINIONS OF THE PRESS respecting the *Journal of Education*, encourage us in the belief that the expense and labour we have voluntarily incurred, and the course we have pursued, will be ultimately appreciated by the public; and as this Journal is edited gratuitously, every farthing received from subscriptions is expended in defraying the mechanical expenses of its publication, and, in adding to its value and usefulness, by numerous engraved illustrations—a new feature in the periodical literature of Upper Canada. We could fain hope that every subscriber would aid in promoting the circulation of the *Journal of Education*. We would be glad to see the excellent suggestions of the *Montreal Witness* acted upon; and although we may not venture to reduce the present small price, we will employ the amount of every additional subscription in adding to the value of the *Journal of Education*.

ADDITIONAL OPINIONS OF THE PRESS

From the New York Commercial Advertiser.

JOURNAL OF EDUCATION FOR UPPER CANADA.—This is a monthly publication, issued at Toronto, the object of which is explained by its title. The March number has a wood-cut exhibiting the front elevation of one of a series of school-houses, including residence of teachers, recommended by the Queen's Privy Council Committee on Education. A descriptive account of the structure and its interior arrangements is promised in a future number of the "Journal." The editorial comments are judicious, and the selected reading exceedingly appropriate to such a periodical. We are glad to find such lively interest taken in the cause of education by our Canadian neighbors, and congratulate the friends of the cause upon their having so able and earnest an ally and advocate as this "Journal of Education.

From Wright's Casket, Philadelphia.

"Journal of Education for Upper Canada." Sixteen pages quarto. Published at Toronto, Upper Canada, at 5s. currency per year. Second year commenced in January. Edited by the Rev. E. RYERSON, D.D., Chief Superintendent of Schools, assisted by Mr. J. GEORGE HODGINS. Ably edited, and calculated to do much good. Success to it.

From the Newbrunswick Reporter.

We have this week placed upon the list of our Exchanges, an excellent Paper called the Journal of Education. It is published in Toronto, and Edited by the Rev. Dr. RYERSON, Chief Superintendent of Education in Canada.

From the Newbrunswick Christian Observer.

We have received and read with great satisfaction and profit the first two copies of the "Journal of Education," edited by Dr. RYERSON, Chief Superintendent of Schools for Upper Canada, at Toronto, Canada West. We think every School Teacher should have it, and would have it if they should see it. It is published monthly, newspaper form, sixteen pages, for five shillings per annum.

From the Montreal Gazette.

We have to apologise to the Editor of the "Journal of Education for Upper Canada," for omitting so long any notice of his well conducted monthly periodical. Among a variety of excellent articles, there are two that especially claim attention. The one on School Architecture by the Hon. HENRY BARNARD, State Commissioner of Public Schools in Rhode Island, and the other is a report of a Lecture by the Rev. Dr. RYERSON, on "the nature and importance of the Education of Mechanics," with especial reference to Upper Canada. We intend at some future time, to transfer the Lecture to our columns, under certainty that the Mechanics of Lower Canada will derive much benefit from its careful perusal.

From the Montreal Transcript.

We acknowledge the receipt of the first number of the second volume of the "Journal of Education for Upper Canada." It contains a good deal of useful information respecting the system of Free schools, a comparison of the State of Free-schools in the United States, an article on School Architecture, illustrated, and a considerable quantity of general information. It is altogether an exceedingly interesting Journal.

From the Free Church Eccles. and Miss. Record.

The March number of this useful periodical has just been laid upon our table. This is the third of a new, and, we are happy to add, much improved series. We are well assured that it will contribute much to the improvement of our educational institutions, from the general information it conveys on every thing connected with the sound education of the rising generation. The suggestions given in regard to the proper construction and ventilation of School houses, are invaluable.

From the Amherstburgh Courier.

We have received the March number of this useful periodical. It contains a large amount of information relative to Educational objects. It would be desirable if every School in the Province was in receipt of a copy for the use of the Teacher and School Trustees. The price is only five shillings currency a-year. The number before us contains valuable information regarding the ventilation &c., of Schools. This is a subject of great importance, because we have reason to fear that the health of teachers and children often suffer materially from close or badly ventilated school-rooms.

From the Montreal Baptist Register.

We are glad to receive this journal in an improved state. In the first article of the January number Dr. RYERSON pleads for Free-schools, that is, for a general taxation, instead of a Rate Bill. The number for February contains a Lecture on "Canadian Mechanics and Manufactures," delivered before the Mechanics' Institute, Toronto, January 12, 1849, by Dr. RYERSON. It is an able and interesting document, from which we shall probably make some extracts in future numbers. There is a valuable article on School Architecture, by the Hon. HENRY BARNARD, State Commissioner of Public Schools in Rhode Island." The Department of "School Architecture" will be very attractive and useful. The No. for March has an excellent article on the Steam Engine by the Editor.

From the British American.

The March number of this useful periodical is before us, and seems to be equally as interesting and instructive as its predecessors. It is embellished with a front elevation of one of a series of School-houses, recommended by Her Majesty's Privy Council Committee on Education, and contains a continuation of an excellent article on School-Architecture, ventilation, &c.

From the Christian Guardian.

We have received the March number of this valuable publication—the third issue of the present volume. The character of the work is admirably sustained. The departments of School Architecture and Science, illustrated as they are with wood engravings, are as well calculated to afford instruction as they are to awaken interest. The increased expense incurred in suitably illustrating the work, evinces the disposition of its Conductors to make the Journal all that its best friends and supporters could desire it to be, while at the same time it furnishes an additional claim upon the patronage of the public.

From the St. Catherines Journal.

The number for March has reached us, and we must say that it seems to be an improvement on even its own predecessors. The work is really invaluab'e, and we entertain large expectations from its circulation. We would add to the testimony of other Districts, as given in this number, that of the Niagara District, as far as we have the means of knowing it, that a growing feeling exists in favor of the "Free-school system." The only objection ever made to it in this part of the country came from a few individuals, whose argument was, "We have paid for the education of our own children, and now let others do the same." On investigation, this argument was found to be based on falsehood; consequently, it lost all its force, if ever it had any. The children of these objectors are educated at our public Grammar Schools, and at the Colleges, sustained and endowed by the public property. They had their children taught at the expense of the country, quite as much as the poor man who sends his children to a Common School. We can assure the conductors of the Journal, that at this moment the existence of a rate-bill keeps two thirds of the children of this large population away from school altogether. In this state of things, we must and do look for an alteration, if the blessings of education shall be commensurate with the wants and interests of a growing community. Every narrow minded and merely selfish consideration must give way before the wants and interests of the country.

From the British Colonist.

The "Journal of Education" for March, was laid on our table yesterday. Its contents are valuable, and deserving of general perusal by all who take an interest in the important questions so ably discussed in the "Journal of Education," and who are desirous of acquiring sound information respecting them. The subject of School Architecture is followed up, by the continuation of the very able paper on School Architecture, "by the Hon. HENRY BARNARD, State Commissioner of Public Schools, Connecticut and Rhode Island." Among the other articles in the number before us, we have pleasure in particularly referring to one, by H. Y. HIND, Esq., Mathematical Master in the Normal School for Upper Canada, on "Schools of Art or Practical Knowledge," to which is appended a synopsis of the course of study pursued in a School of Art and Design. Under the head of "Science and Practical Arts," there is an interesting paper on the Steam Engine, with illustrations. Altogether, the number of the "Journal of Education" before us, is fully equal, in point of merit and worth, to those which have preceded it, if it does not surpass them, and we cordially endorse the appeal of the Editor, wherein he expresses his "earnest hope that the favorable opinions expressed by correspondents and others, in different parts of the Province, respecting the "Journal of Education," will be followed by corresponding exertions to increase its circulation as widely as possible."

From the Philipsburgh Gleaner, L. C.

The second number of the "U. C. Journal of Education has reached us. It contains an admirable Lecture by Dr. RYERSON, to which we shall refer in a future number. Every Clergyman—School Commissioner, and Teacher, ought to take the Journal.

From the Hamilton Gazette.

The March number of this excellent periodical is before us. It is embellished with a view of the "Front Elevation of one of a series of School-houses, [including residence for teachers] recommended by Her Majesty's Privy Council Committee on Education." We cordially commend the work to the patronage of all who feel interested in the education of the youth of this Province.

From the Perth Constitutional.

The "Journal of Education for Upper Canada," is marching on in the laudable career of usefulness and efficiency. Men of education may err, but the history of every country and people informs us, that though the ferocious bravery of a nation might extend their limits beyond conquest, it is only by the arts of civilization and intelligence, that the belligerent spirit of our nature is deprived of its rudeness, and the energy which, without education, would be employed to destroy, is, under the star-eyed guidance of a liberal education, made the means of diffusing many blessings.

From La Minerve.

Nous avous reçu la livraison de mars du "Journal d'Education" pour le Haut-Canada. La rédaction en est toujours conduite une rare habileté. Ce journal est véritablement ce qu'il doit être, une excellente école.

From the Montreal Witness.

The Superintendent of Education for Canada West is doing a great work with his characteristic zeal and ability. The work is to render popular an elevated standard of education, with all its adjuncts of good teachers, and good school-houses throughout the Province, and one of his great levers to accomplish it, is the *Journal of Education*. The March number of this periodical is before us, embellished with a front elevation of a model school-house, and filled with articles admirably adapted to raise up a strong and enlightened public sentiment in favour of good popular education.

This Journal should, we think, be widely circulated; and we scarcely know any way in which an association, say of young men, in each county of Canada, could more effectually promote the general interests of the country, than by raising funds to send the *Journal of Education* to each Minister, Member of Parliament, District Councillor, Magistrate, and School Teacher in the county in question. If associations would set seriously about such a work, we doubt not that Dr. RYERSON would take care to have the necessary number of copies furnished at a very cheap rate, in order to facilitate the advancement of the cause, which he evidently has so much at heart.

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To the 10th April, inclusive.

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☞ Mr. JOHN M'COY, Bookseller, *Montreal*, has been appointed Agent for the *Journal of Education* in that City, and will be happy to receive orders for the Publication.

Mr. P. SINCLAIR, Bookseller, and Proprietor of *Sinclair's Journal of British North America*, has kindly consented to act as Agent of this *Journal* at *Quebec*.

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