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To the Trustees of \_\_\_\_\_

School Section, No. \_\_\_\_\_

in the Township of \_\_\_\_\_

# JOURNAL OF Upper



# EDUCATION, Canada.

VOL. X.

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### SCHOOL ARCHITECTURE.

As the period approaches for the erection of School houses in the spring, we devote a portion of this number of the Journal to the insertion of School House plans. We propose to divide these plans into sets: 1st. Those suitable for Grammar Schools and Common Schools in cities and the larger towns; and 2nd. Those suitable for rural School Sections. We give first,

#### I. PLANS FOR GRAMMAR, UNION, OR SUPERIOR COMMON SCHOOLS.

In the selection of sites and the erection of School Houses, Trustees should have special regard to the following remarks and suggestions:—

1. The sites should, where practicable, be fixed in an agreeable and cheerful neighborhood, apart from railways, factories, &c. The position should be somewhat elevated, or on a gentle slope, and not in the vicinity of low ground or stagnant water.
2. The door should face the South, and the principal windows be to the North, thus rendering access to the School House agreeable at all seasons, and the light inside always free from the glare of sunshine.
3. The ground should be planted with trees, so as to provide a shade for the building and play ground, and not leave both exposed, as is too often done, to the fierce heat of summer and the storms of winter. The grounds should also be nicely laid out, and shrubs and flowers planted when practicable, so as to promote in children a taste for neatness, order and beauty.
4. The proper and economical heating and ventilation of the building should also be carefully studied.

5. The school room should be provided with comfortable seats and desks. These can now be easily procured at the school furniture manufactories in Oshawa, Markham, and Toronto.

6. When the School House is thus prepared and ready for occupation, maps and apparatus, and a good teacher should be procured.

For the following plans and illustrations we are in part indebted to the Department of Public Instruction in the



PLAN NO. I. FRONT PERSPECTIVE.

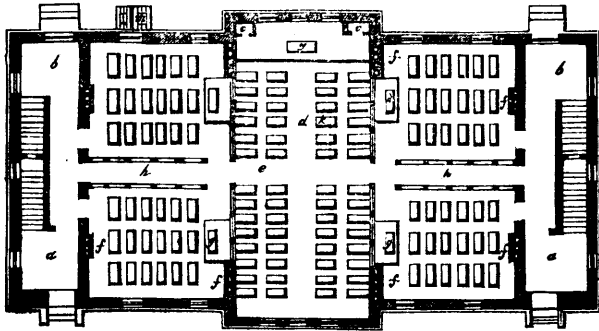
State of Pennsylvania, and to other gentlemen:

PLAN No. 1—FOR 500 PUPILS.

This building is three stories high, and is designed to accom-

moderate 750 pupils—250 on each floor. Unless in very rare cases, a School Building should not exceed two stories in height. In all the passages and school rooms the doors should open outward, (not inwards, as is generally the case,) so as to admit of easy egress in case of fire, accident, &c.

The plan of its first and second floors is as follows :



FIRST STORY FLOOR.

- a. Boys' entrance and stairs to second and third stories.
- bb. Girls' entrance and clothes rooms.
- cc. Closets on the teachers' platforms.
- d. First Master's class room and passage three feet wide.
- e. do. do. do. do.
- f. Flues for warm air or gas, and ventilation.
- g. Master's Desk.
- hh. Passage three feet wide.

The four corner rooms on each floor are, in effect, class rooms, the main room in the centre being the study hall, under the constant supervision and control of the first Master.

Under this system of government and instruction, for which a glazed partition throughout, and the wide central passages, afford full facilities, each story would require five Teachers—a master and four associates—and each would thus constitute one large School. The two class rooms on the second story will be found very suitable for recitation purposes, if either or both of those stories be appropriated to pupils of an advanced grade.

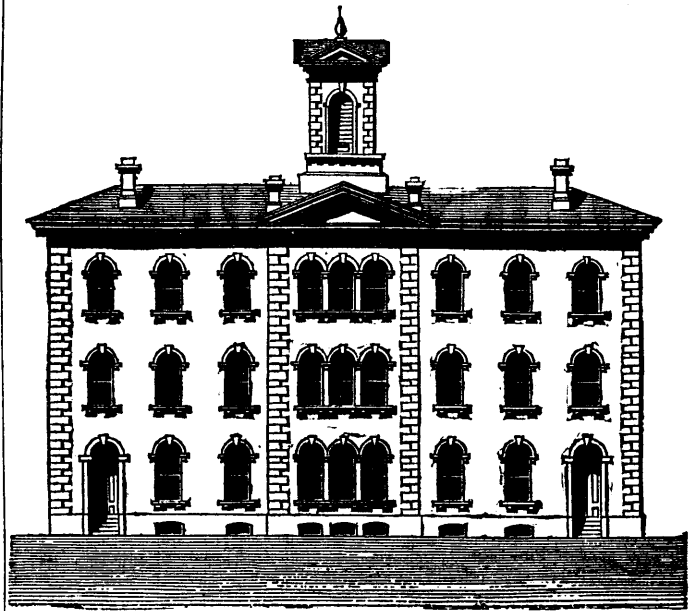
The first story is for girls; the second for boys, and is nearly similar to the first story.

SPECIFICATION.

This plan represents a building forty-seven by ninety-two feet; three stories high, first and second fourteen and third thirteen feet

each in the clear; pitch of roof seven feet, and height of the first floor two feet six inches.

This building is three stories high, divided into class rooms, separated



PLAN NO. I.—REAR ELEVATION.

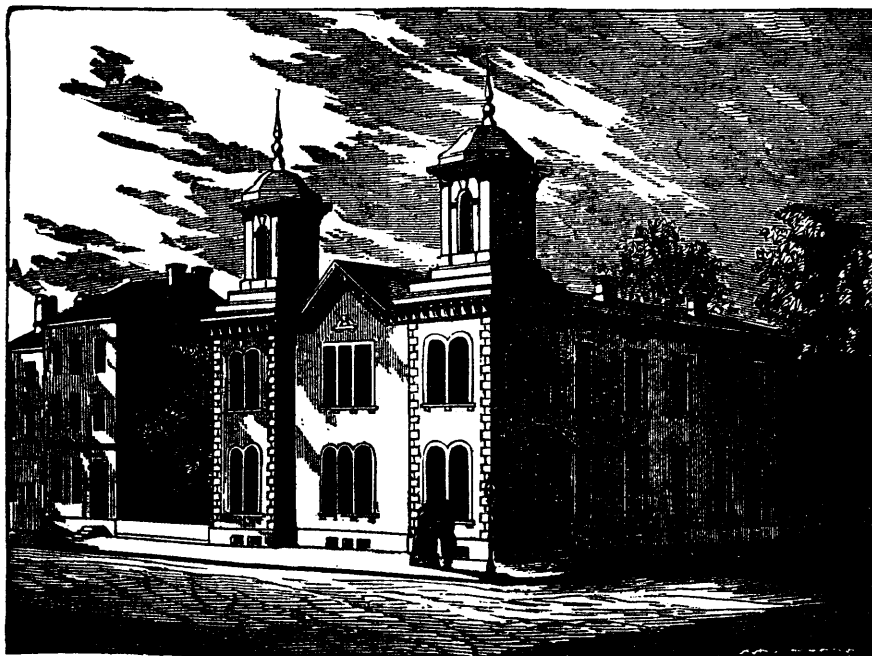
rated by glass partitions, the first story being for girls, and the second for boys. It is intended to be of stone and stuccoed; but if brick is more economical, it would answer equally well.

In this building the two transverse partitions are to be supported by piers in the cellar, the girders to bear on the top of the piers and the walls of the flank; and the joists, arranged longitudinally, to be doubled under the other glass partitions. If the building should be built of stone, the walls will be—cellar 24, first story 22, and second 20 inches thick; but if of brick, they will be respectively 24, 22, and 18 inches thick. The doors and window sills, and the platforms and steps, are to be of cut stone.

PLAN NO. 2—FOR 350 OR 400 PUPILS.

With the changes hereafter suggested, this house will be found to be very suitable for a small town with from three hundred and fifty to four hundred pupils of all grades; or for the ward or other division, containing the same number, in a larger town or a small city, in which the plan of having the schools of each part separate from the others, but still on the Union system, is preferred.

The general idea of the plan is admirable. It provides not only for the three regular grades of Schools in the same building, all so arranged as to be within the full control of the principal teacher, but it affords considerable class room, great facility of entrance and egress, and a fine large lecture hall. These are all very desirable qualities. In the details, however, it slightly fails; but it can be readily improved, both in capacity and arrangement, with little trouble and no increase of cost.



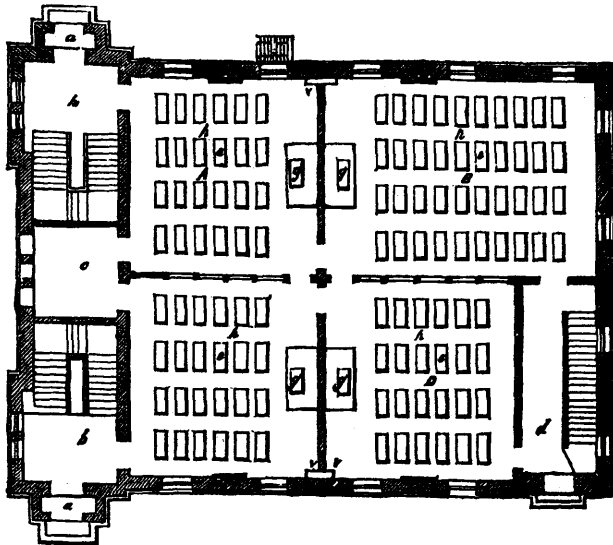
PLAN NO II.—FRONT PERSPECTIVE.

There is no actual necessity for the third or back stairway. [See opposite page.] The space occupied by it, if thrown into the girls' Primary School, will make it of equal capacity with that of the boys'. Each of these rooms will then be about twenty-five feet by thirty-five. This will readily seat two hundred Primary pupils—one hundred in each room. The Superior School rooms are about twenty-five feet square; a space which will seat from thirty-five to forty pupils of that grade in each room.

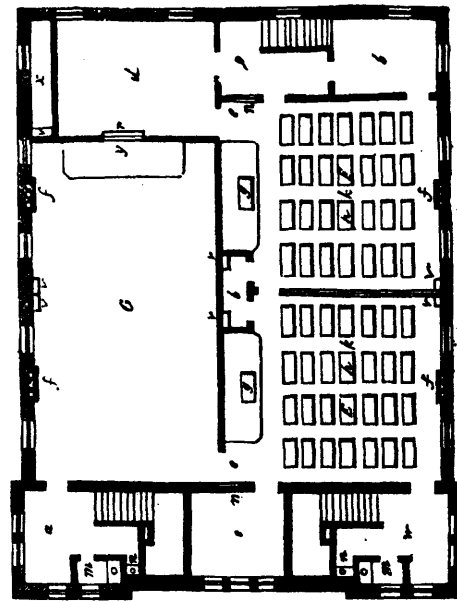
To secure readiness of entrance to the Primary Schools, there should be an outside door to each, opening through a small entry or clothes room. These

doors had better both open directly into the yard at the back of the building, and neither of them into the street; but a gate should lead from them to the street.

The second story also admits of some desirable changes. The two



FIRST FLOOR, PLAN OF. NO. 2.



SECOND FLOOR, PLAN OF. NO. 2.

- A. Girls' intermediate or Superior School room.
- C. Boys' intermediate or Superior School room,
- B. Boys' Primary.
- D. Girls' Primary.
- aa. Outside Porches for boys and girls.
- bb. Clothes rooms for boys and girls.
- c. Teacher's or recitation room.
- d. Entrance to Primary School and clothes room, with stairs to boys' upper room.
- e. Seats for two pupils each.
- f. Flues for warm air or gas.
- g. Teacher's desk.
- h. Passages two feet wide.
- v. Ventiducts.

- E. Girls' Secondary School.
- F. Boys' Secondary School.
- G. Lecture Room.
- a. Lobby and entrance to lecture room.
- b. Clothes room for boys.
- c d. Class rooms.
- ee. Passages.
- f. Flues.
- g. Teachers' Desks.
- h. Seats for two pupils each.
- l. Closets for books, &c.
- mm. Water Closets.
- nn. Wash basins.
- vv. Ventilating flues.
- w. Girls' clothes room.
- x. Closet for library and apparatus.

Secondary Schools may be placed across the back part of the building over the Primaries, each being of sufficient size to seat about sixty pupils; the partition between them should also be of glass, to correspond with the first story.

The remaining portion of the second story, next the stairs, will then become applicable to the lecture hall and class rooms; two class rooms of about twelve by fifteen feet each being taken off one end of this space.

The lecture hall will be about thirty by forty feet, and as it will never be occupied when the Schools are in session, the doors to the secondary and class rooms may open into it. By this arrangement, also, the class rooms will be readily accessible both to the Superior and Secondary Schools, in connection with which they will be chiefly used.

Thus the same space will be made to accommodate a larger number of pupils and in better proportion to the numbers and wants of each grade, than as set forth in the plans above given. The cost of the third stairway will also be saved, and will defray the expense of the alterations just specified.

If, however, the plans as given are preferred, the following are the specifications prepared to accompany them, without embracing any of the changes above recommended.

SPECIFICATION.

The building will be fifty five by seventy-six feet, with two towers projecting slightly from the line of the building. The first and second stories will be each fifteen feet in the clear; pitch of roof nine feet; and elevation of first floor two feet six inches. The walls will be of

stone, stuccoed on the exterior and laid off in blocks in imitation of cut stone. The eave and cornice and cupola, from the level of the eave, will be of wood, and painted and sanded in imitation of cut stone. The covering of the roof will be of tin, as also the base of the cupola and roof of the same, and of the porches. The exterior walls in the cellar will be twenty-four inches, the first story twenty-two, and the remainder twenty inches thick; the walls forming the front stairways will be of brick, thirteen inches first story, nine inches second. Piers will be built in the cellar of stone or hard brick, for the support of the iron pillars, 27 inches at the base, and tapering upwards to 18 inches at the top, for the support of the glass partition which runs longitudinally through the building, and for the support of the floors of joists. The flooring joists of the first, and second stories will be three by fourteen inches; and in addition, a camber-rod will be run through them. The roof will be constructed as in the plan aforesaid. The window frames the same, excepting that all the shutters will be hung inside.

This building will require three flights of stairs, with wall rail, &c. The glass partition in the first story will also require iron posts. The partition separating the girls' and boys' superior School room in the second story, will also be of sash, without the iron posts. The partition forming the lecture rooms, and all others, will be three by six inch scantling. A water closet and wash basin for the accommodation of the girls of the superior School, and also one of each for the teachers will be constructed where shown in the plan, and connected with sufficient and properly constructed sinks or wells.

PLAN No. 3.

(See next page.)

The building next represented is 70 feet long by 40 feet wide; with a front projection, 28 feet long by 14 feet wide. The lot on which it is proposed to erect the building, should be from 150 to 200 feet long, and from 150 to 200 feet wide. They should be corner lots, if possible, and have large open spaces around them. The school-houses should be protected by small lightning-rods (as seen in the engraving, and each building furnished with a school-bell, which could be heard in the remotest part of the town, village, or section.

As seen in the engraving, the building should be surrounded by umbrageous elm, maple, and lime trees—thus giving an air of shade and coolness to the otherwise exposed situation of the building in summer, and relieving the bleakness of the general aspect of the com-

paratively isolated school-house lot in winter. It is greatly to be regretted that, in little matters of this kind, involving so much the comfort, cheerfulness, and happiness of both pupils and teacher, in the naturally heated atmosphere of a school-room, more attention is not paid to the interests of health. We would earnestly commend the matter to the attention of School Trustees and Building Committees.

Before proceeding to an explanation of the interior arrangements of the building, we present a general view, on a reduced scale, of the ground plan of a Grammar School-house, already built, including the cellar, yards, fences, gates, side-walks, &c. This will be seen in the annexed figure.



FIG. I., PLAN NO II.—FRONT PERSPECTIVE.

The grounds around the Grammar School-house, as given in this block plan, contain from 18,000 to 20,000 square feet, or between one-third and one-half of an acre. These grounds are enclosed, and divided into two separate yards and a lawn, by substantial close board fences, *f, f, f, f, f* (Fig. 2), 6 feet high, neatly made, and painted white. The boys' play-ground, B, and the girls', G, are large; but the lawn, E, is small, and is planted with trees and shrubbery. The gravelled side-walks, *s, s, s*, running on three sides of the lot, are shaded by rows of elms, maples, and lindens, set near the curb-stones. The gates, A, C, D, and the gravelled walks, *d, d, d*, lead to the front and the two side-doors of the School-house. The out-buildings, *i, i*, are arranged with a large number of separate apartments on both sides, all well ventilated, each furnished with a door, and the whole surrounded with evergreens.

In the plan of the projection,

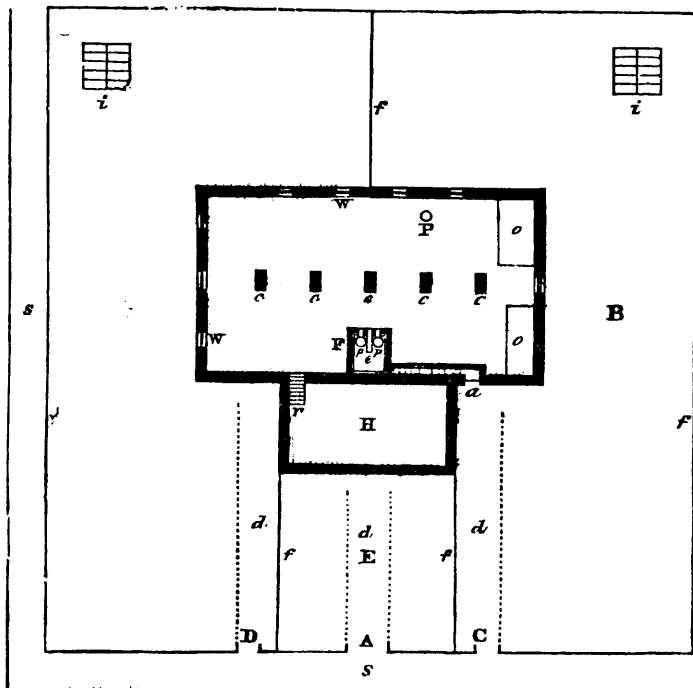


FIG. II.—BLOCK PLAN OF GROUNDS, ETC., OF PLAN NO. 2 FOR A GRAMMAR OR UNION SCHOOL.

The horizontal section of the furnace, F, merely shows the ground plan. The cold air passes through *a* to the air-chamber, where it is warmed by the fires in *p, p*,—two cast-iron cylinders, 14 inches in diameter. The evaporator, *e*, holds about fifteen gallons of water, which is kept in a state of rapid evaporation, thus supplying the air chamber with an abundance of moisture. In the plan and construction of the various parts of the furnace, special pains have been taken to remove all danger of fire—a consideration which should never be overlooked. The furnace is covered with stone, thickly coated with mortar, and the under-side of the floor above is lathed and plastered, not only above the furnace, but at least ten feet from it in every direction.

The cellar walls and the stone piers *c, c, c, c*, are well pointed, and the whole inside, including the wood work overhead, is neatly whitewashed, giving this apartment a neat and pleasant appearance. The walls of the building itself are of stone, about two feet thick, faced with brick, and painted a tasteful color.

PLAN OF THE FIRST FLOOR OF A GRAMMAR OR UNION SCHOOL.

In this Plan (Fig. 3) there are three entrances to the building; the front, A, and the two side doors, B for boys, and G for girls, leading

H, the stairway, *r*, leads to the cellar, which is 7 feet in the clear, and extends under the whole of the main building. The cellar is well lighted, having eight windows, *w, w*, with ten panes of 7 by 10 inch glass. The windows, being hung with hinges on the upper side, and fastened with hooks and staples at the lower edge, may be opened by raising them into an horizontal position, where they are fastened with hooks as when closed. With this arrangement it is easy to keep the cellars well ventilated at all seasons. The openings for the admission of fuel into the boxes, *o, o*, are furnished with sheet-iron shutters, fastening on the inside. The school-house is provided with an abundant supply of good water, obtained from a fountain or from a well, which is generally outside the building, the water being brought in by a pump, P. A supply of good water for a school house should not be considered merely as a convenience, but as absolutely necessary.

into the entries F, C, C. The front is a large double door, with a beautiful frontice of fine hammered granite. At all the outside doors are two or three hewn granite steps, furnished with four or six scrapers at each door. Pupils belonging to the Schools in the lower story, pass from the side entries into the middle one, and ascending two steps at *a*, enter their respective rooms T, S, which are rather larger than those in the primary and intermediate School houses, being 36 feet by 32 feet inside, and 11 feet high in the clear. In each of the entrances C, C, there is a provision *t, t, t*, for setting up umbrellas, as described on page 22 of this No. of the *Journal*.

The seats and desks in the rooms T and S, are of the same dimensions and arranged in the same manner as those in the primary School house described at length on the 13th page of the *Journal* for January, 1849. A section of these seats and desks may be seen in Fig. 5. The small iron posts *c, c, c, c*, about 2½ inches in diameter, supporting the floor above, are placed against the ends of the seats, so as not to obstruct the passages at all. Besides the platforms P, P, 20 feet by 6 feet—the tables, 3 feet by 4 feet, for the Teachers, and the closets *l, l*, for brushes, &c.—there are blackboards, painted upon the walls, extending from the doors D, D, to the windows, 14 feet long by 14

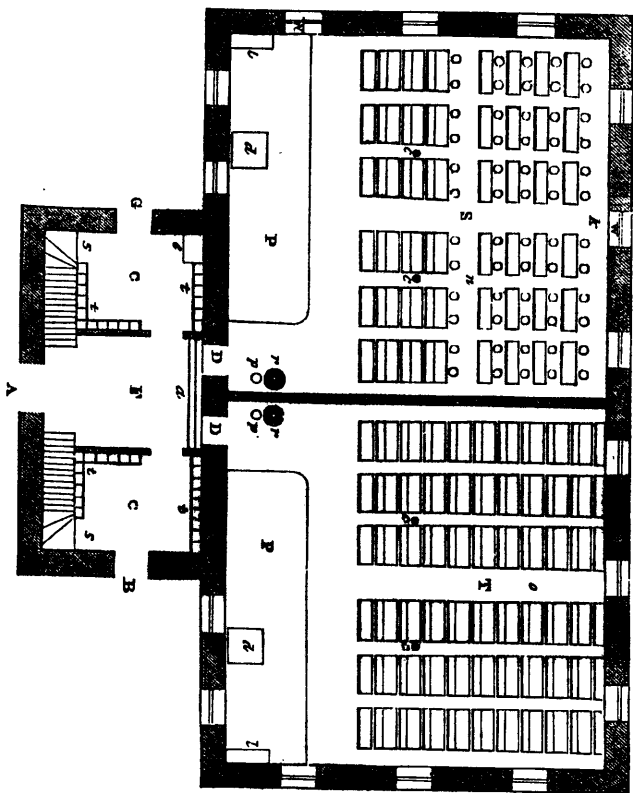


FIG. III.—PLAN OF FIRST FLOOR.

feet wide, with the lines of a stave painted on one end, to aid in giving instruction in vocal music.

These rooms are well warmed by heated air, admitted through registers *r, r*, (Figs. 3 and 4,) 18 inches in diameter, from the furnace below, *F*, (Fig. 2, from which the tin pipes *p, p*, (Figs. 2 and 3,) 14 inches in diameter, convey the air to the School-room in the second story. Each room is provided with two ventilators, each 3 feet long by 15 inches wide, opening into flues of the same dimensions, which open on a level with the floor, and leading into the attic, from which the impure air escapes at circular windows in the gables. These flues thus remove the foul air from the lower parts of the room

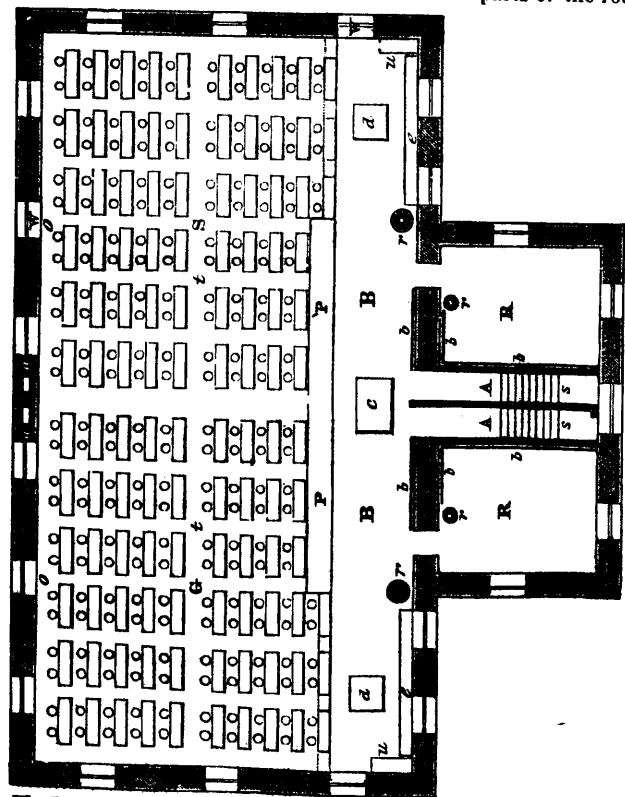


FIG. IV.—PLAN OF THE SECOND STORY OF A GRAMMAR OR UNION SCHOOL, ETC.

and cause fresh, warm air to slowly settle down upon the scholars—a very pleasant and healthful mode of ventilation.

The School room in the second story is large, and with an arched ceiling (see Section, Fig. 5) measuring 12 feet to the foot of the arch and 17 feet to its crown. It is provided with two ventilators 3½ feet in diameter, placed in the crown of the arch, about 20 feet apart.

The entrances to the second story School room are by two short flights of stairs on a side; from the lower entries to *s, s*, (Fig. 4,) spaces about 3 ft. square, and thence to *A, A*, spaces 3 x 5 ft., extending from the top of the stairs to the doors opening into the School room.

The Master's table *c*, as well as the tables *d, d*, for the Assistants, are moveable. The large area *B, B*, being 14 inches above the floor of the room, is 8 feet by 64 feet long, with large closets *u, u*, at the ends, filled up with shelves, &c., for the use of the Teachers.

The School room and the recitation rooms *R, R*, are warmed by heated air, admitted at the registers *r, r, r, r, r, r*, all of which are connected with the furnace in the cellar, by large tin pipes or conductors.

The black-boards, 4 feet wide, painted upon the hard finished walls, are indicated by the lines *b, b, b, b, b*, in the recitation rooms, and along the walls behind the Master's table, extending on each side to the windows beyond, *e, e*, making in the School about 300 feet of black-board. The long benches *e, e*, are used for seating temporarily new pupils on their entering School, until the Master can assign them regular seats; also for seating Visitors at the Quarterly Examinations. The space *P, P*, a broad step, 18 feet by 2 feet wide, is used for some class exercise on the black-boards. The passage *t, t*, about 18 inches wide, running the whole length of the room, affords great facility in the movements of pupils to and from the recitations and other class exercises. The Master's class generally recite in the space *o, o*, at the back of the room, which is 4 feet wide by 64 feet long.

The windows *W, W*, which are hung with weights, and furnished with inside blinds, contain 12 lights each of 10 by 16 in. glass. The quantity of air furnished for each scholar is a matter of no small importance. Each room in a Grammar School, intended to accommodate 200 pupils, should contain over 35,000 cubic feet, deducting the space occupied by the furniture. This estimate allows every child about 150 cubic feet of air for every hour and a half, on the supposition that no change takes place, except at the time of recess. But the rate at which warm air is constantly coming into the rooms from the furnace, increases the allowance for every child to about 300 cubic feet for every hour and a half.

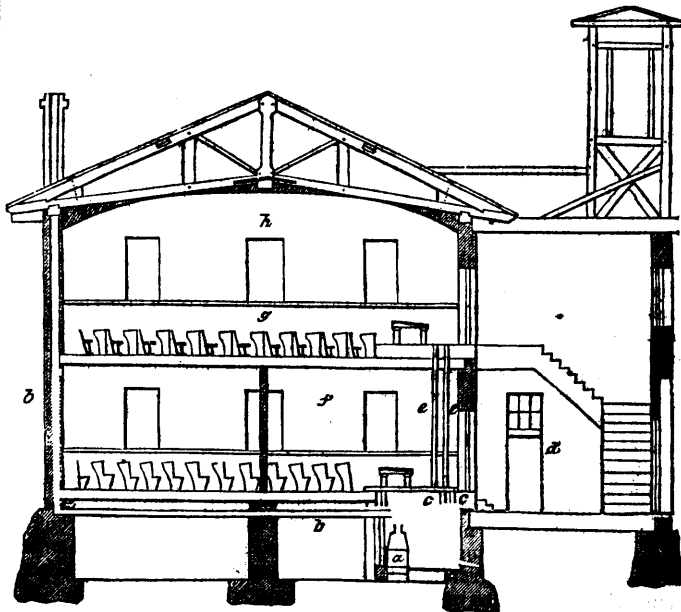


FIG. V.—TRANSVERSE SECTION OF A GRAMMAR OR UNION SCHOOL, ETC.

Fig. 5 exhibits a section of the building as if it were cut through the centre. It shows in an end view the projection, belfry, rooms, seats, desks and cellar. An imperfect outline of the warming apparatus is presented, giving an outline of the plan of its construction. The smoke pipe, connected with *a*, the heater, coiled twice around in the air chamber, passes off in the direction of *b, b*, to the chimney. The short tin pipes *c, c*, conduct the warm air into the lower rooms; and the long ones *e, e*, convey it to the rooms in the second story. On each side of the projection, over the door *d*, is a window, lighting the outside entry, and also the middle entry by another window over the inside door. The end view of the seats and desks do not represent the different sizes very accurately, but sufficiently so to give a correct idea of the general plan.



PERSPECTIVE VIEW OF A SUPERIOR HIGH OR CENTRAL SCHOOL—FIG. I.

We give above the front view of a High School house, which may serve as an exemplar of a Central Town School house. The building is intended to accommodate 600 pupils.

In such a Central School house, there may be a *primary department* in the basement story for small children, both male and female, taught by one or more female teachers. The first floor may be appropriated to an *intermediate School*, or second department, with separate apartments for boys and girls, and taught by a male and female teacher respectively, or by male teachers, as may be preferred. The second floor may be appropriated to the *High School*, or highest department of the Common School—taught by the Head Master of the whole establishment. As the pupils advance through the prescribed courses in the lower departments, they should be advanced to the next higher department, until they complete the course of instruction in the senior department, or High School. The same system of teaching should be observed throughout; and the pupils will not be impeded, and the parents will not be put to needless expense, by various modes of teaching and the use of unsuitable and improper books.

This School house occupies an elevated and beautiful situation. It is a specimen of plain but tasteful architecture; and every School house should be attractive in its very appearance—emblematical of what is taught within. The fence, the grounds, the trees, should be such as to please the eye, improve the taste, and excite cheerful feelings. The yards around this building are enclosed by a handsome baluster fence, resting in front on heavy blocks of rough granite. The steps are of hewn granite, twelve feet long, making a very convenient entrance. The grounds are planted with trees.

The size of the building is fifty feet by seventy-six, with a projection of seven feet. The walls of the basement are of stone; the remaining portions of the walls are of brick.

The School being designed for both boys and girls, an entirely separate entrance is provided for each department. The front door at which the girls enter has a very beautiful frontispiece, with double columns (thus providing for large side lights) and a heavy ornamented cap—all cut from granite in the best style. The words "HIGH SCHOOL" may be seen over this door.

The door in the circular projection, fronting on another street, is the entrance for boys, and has also a fine frontispiece, cut from granite.

The Basement, First and Second Floors, are fitted up as School-rooms, and the entire building, thus divided, is capable of accommodating 600 pupils—boys and girls. We will now proceed to give an explanation of the accompanying *Plans* of the different School-rooms in the building. A reference to *Fig. 1* will be advantageous in connexion with such explanation.

The Rooms in the *Basement Floor* (which is 12 feet high in the clear,) are separated from each other by solid brick walls. The pupils in the girls' department, entering the house at A, (*Fig. 2*), pass into the large lobby C, 12 feet by 28, from which they can go to all parts of the building appropriated to their use.

The furnace room H has a brick floor, and can be kept in as good order as any other parts of the house. The wood boxes, n, n, and

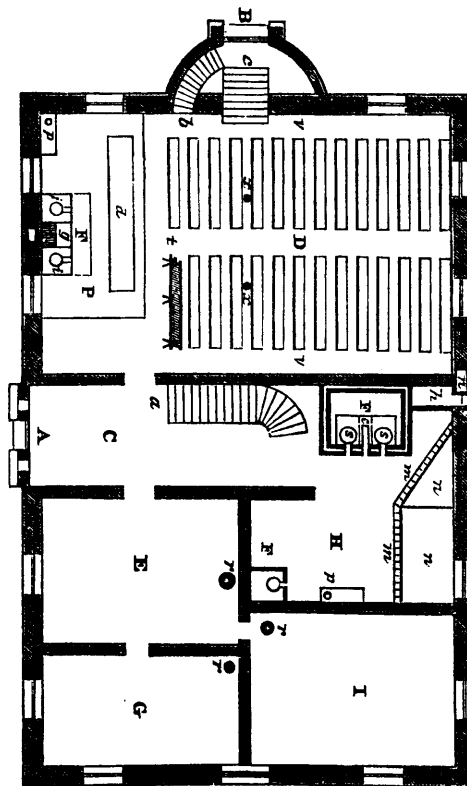


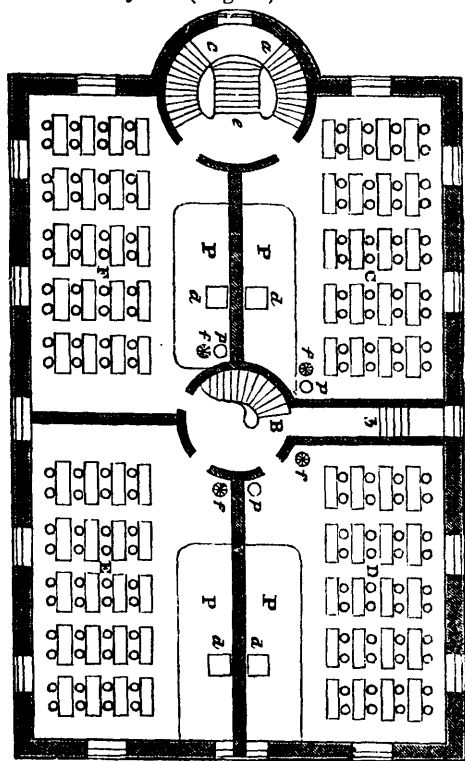
FIG. II.—PLAN OF THE BASEMENT FLOOR.

the furnace F, are so constructed that, with an ordinary degree of care, the room may be kept as clean as any of the School-rooms. In this room, at m, m, provision is made for setting up umbrellas. It resembles a ladder placed in a horizontal position, and is fastened to the ceiling on one side, and supported on the other by substantial posts of oak or other strong wood turned in a tasteful style, and let into the floor. The pump, p, accessible to all in the girls' department, connected with a nice sink, lined with lead, affords an abundant supply of excellent water. The rooms E, G and I, nearly 16 feet by 24 each, are appropriated as offices of the School Trustees, Superintendent and Masters, &c.

The large Lecture Room D, on the left hand side of the *Plan*, is furnished with a sufficient number of seats (a specimen of which is shown at l) to accommodate about 250 pupils. On the platform, P.

which is raised seven inches from the floor, is a long table, *d*, made convenient for experimental Lectures in Chemistry, Natural Philosophy, &c., having pneumatic troughs for holding gases. At *F*, (*i*, *g*, *i*) are suitable provisions for furnaces, &c., required in the preparation of chemical experiments. The pump, *p*, with a sink like the other, in room *H*,) is used exclusively by the pupils in the boys' department.

At all Lectures and other exercises in this room, the girls, entering at *a*, occupy the seats on the right of the middle aisle. The boys, entering by descending the short flight of stairs *b*, are seated at the opposite side of the room. This arrangement is deemed advisable in order to obviate the objections sometimes made against having a School for boys and girls in the same building. The departments are thereby kept entirely separate, except in exercises in vocal music and occasional lectures. The boys enter the house at the end door *B*, which is six feet above the basement floor, and by a short flight of stairs they reach the first story at *e* (*Fig. 3*.)



PLAN OF THE FIRST FLOOR.—FIG. III.

The three rooms, *D*, *E* and *F*, (*Fig. 3*.) are appropriated to the department for girls. They are easy of access to the pupils, who, ascending the broad flight of stairs (*a*, *Fig. 2*), terminating at *B*, can pass readily to their respective rooms.

As the course of instruction in this School occupies three years, the room *D*, (*Fig. 3*.) is appropriated to the studies of the *first* year, *E* to those of the *second*, and *F* to those of the *third*. In each room there are three sizes of seats and desks, but the arrangement in all is uniform—the largest being at the back of the room. The largest desks are 4 feet 8 inches long, and 22 inches wide on the top; the middle size is two inches smaller, and the other is reduced in the same proportions. The largest seats are as high as common chairs (about 17 inches,) and the remaining sizes are reduced to correspond with the desks. The passages around the sides of the rooms vary from 2 to 4 feet wide, and those between the rows of desks from 18 to 24 inches.

On the raised platforms, *P*, *P*, *P*, *P*, are the Teachers' Tables, *d*, *d*, *d*, *d*, covered with green baize and furnished with four drawers each. The registers, *f*, *f*, *f*, *f*, admit the warm air from the furnace, and the pipes, *p*, *p*, *p*, conduct it into the rooms in the upper story. The passage, *b*, leads into the yard, which is ornamented with a variety of shrubbery. The door near *e*, leading from the room *F* is used only for Teachers and Visitors, except when the two departments assemble in the hall. In the room *C* the boys pursue the studies prescribed for the first year. The other rooms in this department are in the next story.

Pupils ascending from the area *e*, *Fig. 3*, by two circular staircases, land on the broad space *a*, *c*, from which, by a short flight of stairs, they reach the second story, which is sixteen feet high in the clear. This second story is divided into three school-rooms—two of the smaller of which, separated from the third by a cross partition, are fitted up precisely like rooms *C* and *F*, in *Fig. 3*. and are immediately them; and the third is fitted up like *D*, *Fig. 2*, only that it is furnished with three rows of seats instead of two, and has three seats and desks on each side of, and parallel to the ends of, the Teacher's platform.

One of the smaller rooms in the second story is appropriated to the middle class, and the other to the senior class of pupils. The arrangement of the seats and desks are the same as in the other rooms, except that they are *movable*—being screwed to a frame not fastened to the floor. The cross partition, referred to above, is composed of four very large doors, about 14 feet square, hung with weights in such a manner that they may be raised into the attic, thus throwing the whole upper story into *one large hall*—an arrangement by which one room can be changed into *three* and three into *one*, as occasion may require. On all public occasions, such as Quarterly Examinations and Annual Exhibitions, the rooms are thus thrown together, and the seats and desks turned so as to face the large platform in the principal School room.

In erecting a building, such as we have described, in which the School rooms are necessarily placed one over the other, care should be taken to deaden the noise overhead. This may be done by filling up (with proper precautions) the spaces between the joice of the floors with tan bark, cork shavings, or some other compact light substance.

PERSPECTIVE VIEW OF A GRAMMAR OR CENTRAL SCHOOL.

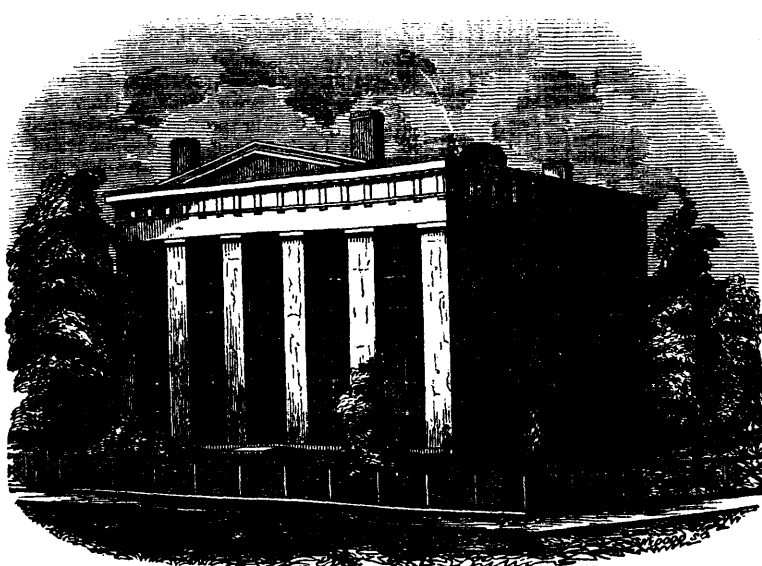


FIG. I.

The building, which has already been erected on a corner lot 198 by 170 feet, is of brick, 70 by 44 feet on the ground. The basement wall, up to the water table, is of stone, laid in hydraulic cement. The roof is covered with tin, laid in white lead.

The basement wall, 10 feet high in the clear, contains a lecture room, (which serves also as a chapel,) 26½ by 40 feet, with comfortable seats to accommodate conveniently 200 pupils. The floor descends 2 feet from the rear of the room to the platform, giving 12 feet height immediately in front of it. A laboratory, 12 by 15½ feet, adjoins the lecture room, with which it communicates by a door at the end of a platform. The remainder of the basement floor is occupied by the

furnaces for warming the building, and by the rooms of the Janitor.

The first floor is occupied by the male department, and consists of a School room about 30 by 54 feet, and nearly 15 feet high in the clear, with two recitation rooms, entries, &c.—There are 62 desks, each four feet long and accommodating two pupils.

On the second floor are the girls' school room, about 28 by 40 feet, with seats for 76 pupils, 2 recitation rooms, library, hall, and room occupied by primary department. There is a large skylight in the centre of the girls' School room, and another in the library. The rooms are fifteen feet in height.

The building is thoroughly and uniformly warmed by two



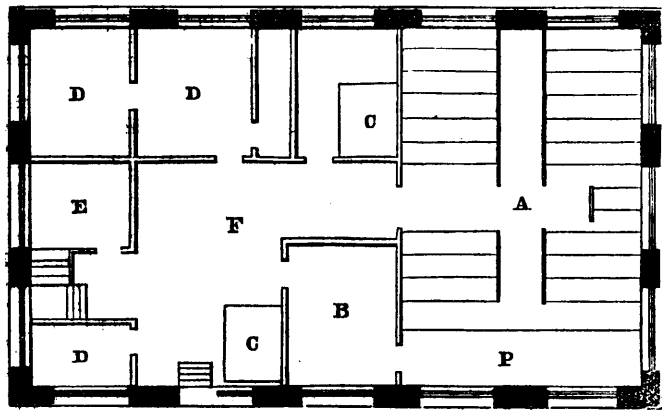


FIG. II.—BASEMENT.

- A. Lecture Room and Chapel.
- B. Laboratory.
- C. Furnaces.
- D, D, D. Janitor's rooms.
- E. Entry.
- F. Hall.

furnaces, in the basement, and a change of air is secured by ventilators at the top of the rooms, and also near the floor, opening into flues

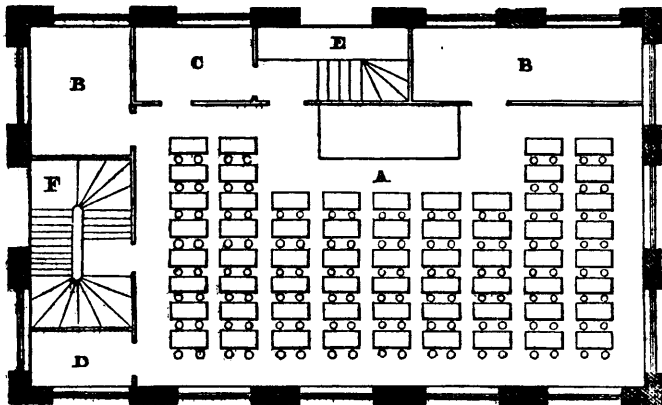


FIG. III.—PLAN OF FIRST FLOOR.

- A. Boys' School Room, with 124 seats.
- B. Recitation rooms.
- C. Dressing room.
- D. Closet for Apparatus.
- E. Entrance for Boys.
- F. Entrance for Girls.

which are carried up in the chimneys. The warmth imparted by the smoke which passes up in the adjoining flues secures a good draft. In

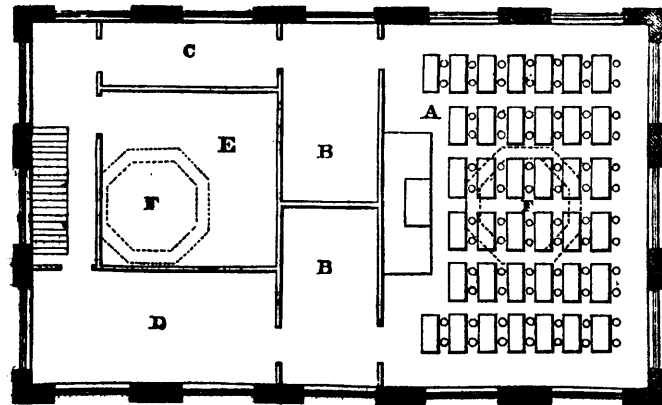


FIG. IV.—PLAN OF SECOND FLOOR.

- A. Girls' School Room, with 76 seats.
- B. Recitation rooms.
- C. Dressing room.
- D. Primary Department.
- E. Library, lighted by sky-light.
- F. Skylight in ceiling.

the upper story additional means of ventilation are furnished by the sky-lights, which can be partially opened. Illustrations on this subject will be given at the close.

The supports are of wood, however, instead of cast iron, and the seats are easy Windsor chairs. Both seats and desks are firmly secured to the floor by small iron knees and screws. For pattern see illustration at the end.

The School and recitation rooms are all furnished with large slates set in the wall in the room of blackboards.

Patterns of the teachers' desks in the School rooms will be given at the end.

The whole cost of the building, including furnaces, scholars' desks and chairs, slates and inkstands, was about \$6,000. As many of the School houses now about being erected in several of the Towns of the Province at about the cost of the building illustrated in the Number, the plans and interior arrangements carried out in this building will be an excellent guide in approximating to the cost of one adapted to the wants and resources of the Town in which it is designed to erect one or more superior School houses.

[To be continued.]

## Papers on Practical Education.

### FONDNESS FOR TEACHING.

The question is often asked by those about to engage in teaching:—"I wonder if I shall like teaching." Now, one of the first requisites for success in this vocation is a fondness for the occupation,—an ardent love for the work; and we would have beginners in the profession enter upon their labours with nothing less than a determination to love the work. This determination, before a practical trial has been made, cannot, as we think, be regarded as premature or inconsiderate. No person should engage in teaching, without having first studied the nature of the calling, and his fitness for its duties; and public sentiment now quite generally demands, also, some special professional training for the work. In the case of an individual who has thus studied his vocation and himself (we used simply the masculine pronoun for the sake of convenience, including, of course, teachers of both sexes), and also, perhaps, made some special preparation for engaging in it; and who still has a desire to make a trial at teaching; it is fair to presume that their is enough in such a person's tastes and predilections to constitute a guaranty, that the labours of the teacher will be, in a good degree at least, congenial to him. Hence we think such a beginner in teaching may safely resolve to love the work.

Entering upon the labours of the schoolroom with this resolution, the young teacher will be in a frame of mind to understand properly the nature of his work, to grapple successfully with its difficulties, and to bring the full strength of a willing mind to bear upon the discharge of his duties. This, most assuredly, will lessen his trials. Such a state of mind is to him the achromatic glass, through which he clearly sees the many perplexities and provocations he necessarily encounters, in their true relations, without distortion, and without the confused colourings of a dissatisfied mind. And it is to him, likewise, the astronomer's planet-seeker—the far-seeing glass. It enables him, reading the hearts of his pupils, to discern those little points of light, not obvious to common vision, to understand those little peculiarities and traits of character, to discover those little signs of encouragement and success, so cheering and so valuable to him, and which by a doubting, wavering, and indifferent teacher are never seen.

But there are teachers, too many indeed, who do not love their work. It is not very uncommon to hear one of that class remark:—"I would not follow teaching, if I could get out of it. I am in the business, and am not fit for anything else." Alas, that such a teacher should not understand himself, as well as others understand him! While he is conscious, or fancies himself so, that he is "fit for nothing else," it is a matter of deep regret that he is not also conscious of his utter unfitness for the very business in which he is engaged.

According to our idea of the feelings which a teacher ought to cherish for his calling, the schoolroom must seem the most unsatisfactory place in the world to a teacher who regards his labours as mere drudgery, and looks upon them with disgust. It would seem to be a kind of slow, but real, torture. Small, indeed, must be the pleasure that such a teacher derives from his daily labours. Not only is he a loser himself in this respect, but he inflicts a great wrong upon the community. He is without the proper spirit of a teacher, and he cannot labour with success, or profit to others. His work will be unskillfully and badly done; and he will send forth his pupils infested with his own bad temper, and without that harmonious development of their powers and character which is the true end of education. He owes it to himself, but more especially to the welfare of the community, to cultivate and exhibit a fondness for his calling; or to step aside, and give his place to others who are qualified to discharge its important and delicate duties.

Such is the character of the age, that the teacher has a great work to perform,—great, not only in respect to its arduous duties, but in respect to its consequence upon our own, and upon future times. No one qualification is more indispensable for him than a love for his work,—the true teacher's spirit. The teacher who has it will take delight in his labours, and will be willing to spend his strength and his days in moulding the character of the young. And let him not fear lest he

may not be appreciated. A successful teacher of the right spirit is quite sure to be sought for, and to be awarded a compensation that will enable him to devote his life to his profession. He will secure the co-operation of the public, and of all friends of improvement in particular; will be recognized as an useful citizen; and will have assigned to him that position, socially and otherwise, in the community, that will entitle him to the respect and confidence of his fellow-men. To such a teacher every valuable member of the community will say, in the language of the curate Nathaniel to the schoolmaster Holofernes;—"I praise the Lord for you. You are a good member of the Commonwealth." *IDEM.—English Journal of Education.*

#### THE IMPORTANCE OF PUNCTUATION AND THE BEST METHOD OF TEACHING IT.

[An Extract from a prize Essay, by WILLIAM A. WHEELER, Principal of Partridge Academy, Duxbury.]

More than four hundred years ago, the celebrated Caxton discovered that "the craft of poynting, well used, maketh the sentence very light;" and there are probably few persons to be found, who would unqualifiedly deny the importance of punctuation; but, at the same time, the fact cannot be disputed, that a vast majority, even of otherwise well-educated people, are wholly ignorant of the very first principles of the science. This is not an unfounded, nor too sweeping a statement; it can be easily proved. Passing by, as unworthy of notice, the ridiculous autobiography of the notorious Lord Timothy Dexter,—who printed his book without a single stop-mark of any kind, and then placed a large supply of "the raw material" at the end, for each reader to "pepper and salt" according to his own taste,—we find abundant evidence of the correctness of the assertion, in the columns of every newspaper, and the pages of more than half the magazines and books that issue from the press.

It is only a few months since, that a pamphlet of about six pages, containing over two hundred errors of punctuation, was published by the Superintending School Committee of one of the towns in this country. Many of these errors were ludicrous enough, most of them perfectly obvious, and all of them extremely discreditable to their authors. The importance of punctuation might be very happily and conclusively illustrated by citations from the pamphlet referred to; but the writer of this essay prefers, for reasons which need not be given, to draw his examples from other sources.

The following sentence may be punctuated in a great many different ways:—

"The persons inside the coach were Mr. Miller; a clergyman; his son; a lawyer; Mr. Angelo; a foreigner; his lady; and a little child."

As here punctuated, with a semi colon after each noun, the number of individuals is eight. Arranging the names in pairs, thus,—

"The persons inside the coach were Mr. Miller, a clergyman; his son, a lawyer; Mr. Angelo, a foreigner; his lady; and a little child." we reduce the number to five, and entirely change the meaning of the sentence. Varying the punctuation a third time, we find that

"The persons inside the coach were Mr. Miller; a clergyman, his son; a lawyer, Mr. Angelo; a foreigner, his lady; and a little child."

The number of combinations which can be produced in this sentence by very slight changes of punctuation, is surprising. But it may be said that this is citing an extreme case, and that the ambiguity of sentences oftener depends on the faultiness of their construction than the faultiness of their interpunction. This may be true in a measure, but not merely. Many obscure passages in ancient authors have been elucidated by simply changing the old and absurd pointing. Examples without number might be adduced,—for twenty thousand emendations of this kind have been made in the text of Shakspeare alone,—but three or four will be amply sufficient. \* \* \* \* \*

But let us take an illustration from Shakspeare. In the "Merchant of Venice," Bassanio, moralizing upon the deceitfulness of outward appearance, has uniformly been made to say,—

"Ornament is but the gulling shore  
To a most dangerous sea; the beauteous scarf  
Veiling an Indian beauty: in a word,  
The seeming truth that cunning times put on  
To entrap the wisest."

Now, none of the commentators have been satisfied with "Veiling an Indian beauty:" because "beauty" is obviously just the opposite of what the poet intended. One of his editors, therefore, has proposed "Indian dowdy;" but the obscurity of the passage is entirely cleared up by carrying back the colon after "beauty" one remove, and reading as follows:—

"Ornament is but the gulling shore  
To a most dangerous sea; the beauteous scarf  
Veiling an Indian: beauty, in a word,  
The seeming truth that cunning times put on  
To entrap the wisest."

Again, in King Henry VIII., the character of Cardinal Wolsey is most absurdly given in the following lines:—

"This cardinal,  
Though from an humble stock, undoubtedly  
Was fashioned to much honor. From his cradle  
He was a scholar, and a ripe and a good one."

"It is astonishing," says Collier, "that so decided a blunder, as to represent that the cardinal was a ripe and good scholar 'from his cradle,' should have been repeated over and over again from the year 1632 to our own day." The passage should obviously be punctuated to read thus:—

"This cardinal,  
Though from an humble stock, undoubtedly  
Was fashioned to much honor from his cradle.  
He was a scholar, and a ripe and a good one."

It may be remarked, in passing, that Shakspeare could never have used the semicolon; for its introduction into our language did not take place till 1633, seventeen years after his death. This is a circumstance "which the profound George Chalmers mourns over, opining that semicolons would often have saved the poet from his commentators."

A single quotation from Milton shall close these illustrations. In the eighth book of Paradise Lost, Adam relates to the arch-angel Raphael the story of his creation, and tells him all that he saw and did, when he first found himself "a living soul." In the old editions of that poem he has been made to say:—

"I saw  
Hill, dale, and shady woods, and sunny plains,  
And liquid lapse of murmuring streams;—  
Birds on the branches warbled; all things smiled  
With fragrance; and with joy my heart o'erflowed."

This is not the true reading of the passage. By placing a semicolon after "smiled," and removing the one after "fragrance," an important emendation is made, and the real meaning restored. Thus:—

"I saw  
Hill, dale, and shady woods, and sunny plains,  
And liquid lapse of murmuring streams;—  
Birds on the branches warbled; all things smiled;  
With fragrance and with joy my heart o'erflowed."

By "fragrance," Milton has endeavored to convey, in one word, an idea of that exquisite and delicious rapture, which most resembles the perfume that flowers emit after a shower or dew.

But these examples, taken almost at random from hundreds of others, are not needed to convince the practical and reflecting teacher, of the importance of this subject. If he has ever been accustomed to hear classes read, or condemned to correct "compositions," he knows its importance from actual experience. He knows that young and unpractised readers often fail in the correct delivery of a given passage, in consequence of its false or defective pointing; and he also knows that young writers are extremely apt, either to neglect punctuating their productions entirely, or else to err by excess, and mark off even the minutest members of a sentence. This, however, is not at all to be wondered at. Ignorance cannot be imputed as a fault to those who have never been able to obtain instruction. \* \* \* \* \*

—Connecticut Common School Journal.

#### EDUCATION IN IRELAND.

[Dublin correspondence of the London Times.]

Quite a commotion has been created among the Irish journals, by certain interviews upon education in its highest branches, propounded by Dr. Lyons.

The name of Dr. Lyons is familiar to the profession at large, not less by his eminence as a practitioner, than by his recent scientific visit to the Crimea at the instance of the government. Here is an extract from the address above referred to:—

I have been at some pains to bring together from various sources such available evidence as can be reached with regard to the status of superior education, as tested by university graduation, in several of the countries of Europe in which public attention has been given to educational movements, and in America. These results have been collated with such authorities as are accessible, and though they are to be regarded only as approximations to correct data, they are yet, I think, worthy of some confidence. With your permission, I will cite from the list which I hold in my hand some of the more remarkable results. It may be observed that no very constant or unnecessary connection is to be found between the status of primary and that of secondary education. Thus it will be seen that, in a country in which primary education is compulsory and all but universal, superior education is by no means so high in proportion to the total population as in several other countries in which voluntary education is the rule.

At the top of the list Scotland must be placed; it furnishes a proportion of one in 5,000 of its entire population. The several countries of which these data have been ascertained are as follows:—

Scotland, one graduate in 5,000 of population.	
Norway, one " 7,428	
Holland, one " 7,692	
U. States of America one in 7,795	
Saxony, one " 7,826	
Austria, Archduchy of one in 8,000	
Belgium, one " 8,670	
Ditto, in 16th century [6,000 students at Louvain.]	
Bavaria, one " 9,000	

Denmark,	16th cen.	10,000
France,	"	10,871
England & Wales,	"	14,705
Ireland in 1831	"	18,750
" 1850	"	20,812
" 1858	"	17,567

Supposing population at 7,000,000, and deducting fifty English students, the proportion will be only one in every 21,865.

If we based our calculations strictly upon the degree of A. B. which is the only effective one, and that assumed for France, and upon a normal population of 8,000,000, the proportion in Ireland would not reach even 1 in 30,000.

From these facts it is obvious that with regard to superior education as tested by university graduation—and this, be it observed is the only possible criterion—the youth of Ireland is in a most backward condition. I have before stated that there is a grave reason for doubting that the intellect of this country is, or has been, at all adequately represented in the progressive advancement of science in any of its branches. I have also stated as my own conviction, that the cultivation of knowledge by methods of original research is, and has at all times been, in a backward condition among us. We have just seen that in regard to superior education, as tested by university graduation, we are far behind the neighboring country, and quite distanced in the race by our celtic brethren of Scotland. Yet it is no aggravation to say that, however our other qualities may be regarded, a high order of mental endowment among Irishmen is almost proverbial, even with those by whom we are most misrepresented. I can see but one possible explanation for this state of things. It appears to me that if the intellectual movement of the past century has produced such small results, either as regards original contributions to knowledge or the superior order of education among youth, it is owing to the fact that but a surface current of Irish intellect has been put in motion, while the great mass continued to lie all but still and unmoved beneath. Hence it is that large manifestations of intellectual excellence and power have been rare, fitful, and without that connection as regards time or objects, or the simultaneous cultivation of allied branches of knowledge which has been evinced in other countries at all periods when the national intellect and genius have been thoroughly aroused; and once aroused and enkindled by the vivifying breath of science, though they may remit, they never extinguish the fire while the intellectual and political life of the race continues.

You cannot fail to anticipate the conclusions to which I aim. We have found upon proofs which can themselves be readily tested, that science and superior education in this country are far from being in a position which is at all creditable to national intellect.

#### CIVIL AND SOCIAL IMPROVEMENT IN CHINA.

The Rev. I. J. Roberts, who at one time was the teacher of Tae Ping Wang, now the leader of the rebels in China, gives the following summary of the progress of events in that country. "This day, nineteen years ago, I landed in China, the darkest period of China's moral night. The laws of the land then prohibited the preaching of the gospel. Leang Afah had been persecuted and fled the country, and I was advised to leave also. Since then, however, I have had the privilege of studying the language, and pioneering the gospel among the people in Macao, Hong Kong, and Canton; of baptizing twelve Chinese, two of whom I hope are now in heaven. The treaty, enlarging opportunities of usefulness, was made in Nanking in 1842; religious toleration granted in 1844; Tae Ping Wang taught by me in 1847; and now the gospel in 1856 is preaching under the superintendence of eighty-eight missionaries, in five open ports, Hong Kong and the interior, all of whom are at liberty to locate with their families among the people." "What hath God wrought" within these nineteen years!"

#### Miscellaneous.

##### HOW MANY HOURS TO WORK.

The limit of mental work varies not only in various individuals, but according to the nature of the work itself. Johnson assigns eight hours a day as sufficient for study; Sir Walter Scott worked four or five; mathematicians and those who do not tax the imagination much, may and do safely study ten or twelve hours daily. As a general proposition it may be stated, that those studies which excite the feelings are those which can be least borne. On the other hand, the tranquil labors of the mind have marked tendency to prolong life. "On meurt de Betise" is perfectly true; the unemp'oyed brain, liked the unused muscle, decays and perishes quite as soon as the over wrought organ. Bernard in his "Treatise on the Influence of Civilization on Longevity," shows the effect of brain labor of an unexciting kind in those who are protected by an assured income from the inroads of care. He took at

random the ages of one hundred and fifty-two individuals, one-half of whom were members of the Academy of Sciences, the other half the Academy of Inscriptions, and found that the average longevity of these mathematicians and antiquarians was sixty-nine years. Sir Humphrey Davy seems to have had in view those only who have "battled" with life, when he states "that there are a few instances in this country of very eminent men reaching to old age. They usually fail, droop, and die before they attain the period naturally marked for the end of human existence; the lives of our Statesmen, warriors, poets, and even philosophers, offer abundant proofs of the truth of this opinion,—whatever burns, consumes—ashes remain!"—*Consolations in Travel*, p. 171. No one who had the happiness of knowing the extraordinary man will doubt an instant whence these suggestions sprang, and to whom they most eminently applied. Scott always said that Davy would have been a great poet had he not chosen to be a great philosopher. The excitement and its consequent effect on the frame must have been excessive in one of such impassioned imaginations as Davy, at the moment when the truths which have laid the foundation of modern Chemistry were dawning on him. Even the calm and tranquil intellect of Newton could not bear the blaze of light of his own approaching discoveries; as, prostrated by its effulgence, he gave over his calculation to a friendly hand to finish.—*London Quarterly Review* 1855.

#### WILLIAM PENN

Indulged in a few noble and trite aphorisms,—“Be resolved, but not sour, grave but not formal, bold but not rash, humble but not servile, patient but not insensible, constant but not light. Rather be sweet-tempered than familiar, familiar rather than intimate, and intimate with very few and upon good grounds.” Penn was a good man, but like many of his day, and up to the present, held to the too prevalent error, that he and every other man could like and dislike, love and hate, just as they thought proper! Like a neglected garden overrun with weeds, it takes long ere the human mind gets clear of the principles of a false education!

#### MUSIC, PICTURES, FLOWERS.

As the reader glances at the above words, perhaps he will exclaim, "what have these to do with education, or with the school room?" In by-gone days, we are well aware, they have often been treated as useless exotics; and had any teacher, a quarter of a century ago, advocated attention to them within the school-room, he would have been expelled from his position, as being a very *notional*, not to say *foolish*, man. But a wiser and more joyous era has already commenced; and some of our best and most popular teachers are not unwilling to manifest an interest in one or more of these subjects. It will be our aim, in a brief space, to urge their claim to a place in the school room.

Vocal music has already assumed a somewhat exalted position in some schools, and yet in scarcely any have its merits been fully estimated. It is, indeed, less than a score of years since school-room songs were a very great novelty; and we can well remember that those who first favored their introduction, were strongly censured by parents and others. It was regarded by many as a monstrous innovation. For children to go to school, term after term, and sit, *aching*, on wretched seats, in still more wretched school-houses, caused no regret, because such penance seemed to be an essential part of school life; but for school boys and school girls to *sing*—who ever heard the like? It was a great waste of time; and moreover, it caused the little ones to be happy, and for a brief time to forget their aches; which, it was thought would be a perversion of the object of schools. Such was the feeling very generally. But a pleasant change has come "over all the land," and now the joyous songs of merry pupils may be heard in a large number of our best schools,—alike promoting their happiness and cheering them on in the performance of the less agreeable duties of the school-room, and meeting the approval of all kind and intelligent people.

Though we cannot sing,—our school days having been passed all too early for receiving any instruction in singing,—would stornly advocate the teaching of music in all our schools. It is a good disciplinary exercise, and its indulgence always tends to give an air of cheerfulness to the school-room. But we would have the songs, and the sentiments of the songs, of a truly pure and elevating character. We have no partiality for the practice, now, we feel, quite too common, of having lessons and recitations set to music. This we think a perversion of the object.

We confess, also, that we are great admirers of pictures and paintings. We value them as objects of attraction, and also for the pleasant and harmonious influences they exert. It was our pleasure, recently, to visit that model institution, "The Retreat for the Insane," in Hartford. We were greatly delighted with the perfect order and neatness of the rooms and grounds, and with the taste and good judgement with which all things were arranged. But our admiration was most excited at beholding the numerous and well selected paintings and pictures

with which the several rooms and halls were embellished; and we were not surprised in learning, as we did from DR. BUTLER, the excellent and kind-hearted superintendent,—that the influence of these upon the minds of the unfortunate inmates was highly beneficial, making them more quiet and happy. He stated that no injury had been done to a single one of the hundred and twenty-five pictures that had hung upon the walls for more than a year.\* Now we believe that much good would result if school rooms should be adorned with appropriate pictures and paintings. They would not only make the room more attractive, but they would exert a silent, though sure and pleasant influence over the minds of the youth. We are all affected by the nature and condition of the objects which surround us; and the silent, unconscious influence of inanimate objects is, often, far more powerful and controlling than we imagine.

And so with flowers. How much they may do, not only to "beautify the earth," but also, with smiling looks and fragrant voices, to contribute to man's enjoyment and promote his cheerfulness. We are well aware that some affect to despise the culture of flowers, regarding them as useless products. But to him who

"Finds tongues in trees, books in the running brooks,  
Sermons in stones and good in everything."

there will be a sincere delight attending the culture of the flowers which speak so unequivocally of the goodness of the great Creator who has made the flowers—

"To comfort man, to whisper hope,  
Where'er his faith is dim;  
For who so careth for the flowers,  
Will much more care for him!"

Whenever we see a house, with its neat flower garden and well trained vines and shrubbery, whether it be in the thriving village or away from the "busy haunts and noisy shops," up among the hills or mountains, we always feel that the indwellers have hearts that feel for others' woes, "God who careth for flowers," will not be unmindful of those who appreciate the *beauties* as well as the *utilities* of his handiwork. What a bright, joyous, cheerful aspect would the earth wear, if all who dwell thereon would plant and cultivate a few flowers? It would not only tend to "strew man's pathway to the tomb" with flowers, but also to shed a sweet fragrance around his daily walks and vocations. Then will not teachers do what they can to foster a flower-loving spirit? If they will, they will be amply compensated by their reflex influence in promoting a genial disposition in the hearts of the little ones under their charge. Whenever we see a happy boy or girl gaily tripping along the school-ward path, with a bunch of flowers, whether culled from the garden or road side, for the teacher's desk, we always feel that in the young heart which prompted the gift, the teacher will find a ready and cheerful obedience to his wishes.

We hope the time is not distant, when every teacher will feel it not only a *duty* but a *privilege* to cultivate in the hearts of our youth a refined love for music, paintings, and flowers; feeling assured that thereby much will be done to promote both the happiness and true usefulness of their pupils. And when it shall be deemed an essential part of a school-yard, to have a neatly arranged flower lot, we shall find the love of school increasing, and a growing dislike for coarse and uncourteous acts on the part of the young. Whatever tends to adorn and beautify the place in which children spend much of their time, will leave a pleasing and lasting impression upon their young and tender hearts. In the language of Keats:

"A thing of beauty is a joy forever;  
Its loveliness increases; it will never  
Pass into nothingness, but still will keep  
Full of sweet dreams, and health, and quiet breathing;  
Therefore, on every morning let's be wreathing,  
A flowery band to bind us to the earth."

And, as another says, "if rightly wreathed, the band will bind us to Heaven no less."—*Connecticut Common School Journal*.

N.

## PUBLIC SPEAKING AND DEBATING.

(From Groombridge's "Talking and Debating.")

The great nations of ancient and modern times have cultivated oratory as one of the noblest arts, and it has become the fashion to judge the relative positions of nations, in the scale of civilization, by their respective excellencies in the exercise of this high accomplishment. Oratory has served the highest uses in promoting the prosperity of states, the administration of justice to individuals, the promulgation of truth, the denouncement of wrong, and assertion of right, in every age of the world; and is at once the most attractive as well as the most persuasive and forcible of any mode of *expression* exercised by man.

At the present day, no man of any pretensions to literary culture or social refinement, dare consider himself utterly free from liability to

be called upon to appear in public as a speaker—either to defend a principle, enforce his own claims or the claims of others dear to him, to oppose a false doctrine, or simply to return thanks at a dinner, or propose a resolution at a meeting; but to do such things well is less easy than is sometimes imagined, for the mere gift of speech will not make an orator, nor the most perfect *knowledge* of a subject enable the proficient to expound it with ease.

The same may be said of debate—most men can reason but not many can *argue*; there are very few who cannot distinguish common sense from error and bigotry, but *want of method* will frequently weaken the force of a truthful and sincere appeal, and give a temporary victory to the abettor of falsehood.

### HOW TO MAKE A SPEECH.

Whatever the subject of address, the speaker should preserve his self-possession and check all enthusiasm at starting. A beginner, in oratory, should first of all guard against what is called *warmth*, for when once the energy of the speaker rises into impassioned eloquence, it requires the judgment based on long experience to keep the tongue within bounds, to preserve the thread of connection, and to avoid turgidity, strained comparisons and bombast. A young speaker will often take us by surprise with a fine burst of original eloquence, and no sooner has the applause subsided than signs of exhaustion show themselves. He is striving to follow up the grand hit with a still greater; he cannot succeed; he gets confused, begins to stutter, and perhaps breaks down just as the field was open for him. Why does he fail? Simply through having lost control of himself—his imagination has extinguished his reason, and the thread of connection is lost. Positive coldness is better than injudicious warmth, measured sentences preferable to hurried exclamations, and an immovable firmness and quietude of demeanour, more worthy of cultivation than all that is understood of "moving appeals" and "passionate addresses."

### THE EXORDIUM.

Every set speech should be complete in itself; it should have a commencement, in which the subject is introduced; then the main portion of the address must be devoted to the consideration of the question, and the *peroration* or close should set forth the conclusions of the speaker as based on the arguments already advanced.

The exordium should be as brief as possible, and the more attractive in style the better, so as to engage, at once, the attention of the audience. Yet there must be no vain attempt at oratory, and during this part of the discourse the speaker should maintain a measured calmness, such as to prove his claim to undivided attention.

Many experienced speakers commence their addresses with a happy allusion, a queer comparison, or a statement of some apparent paradox which is to be unravelled as the speech proceeds, and which naturally opens up the question to be considered. If this is cleverly accomplished, the attention of the audience is riveted at once, and the speaker is pretty sure to have a respectful and appreciative hearing, even if the whole of his hearers are opposed to the views he advocates. Ability always commands applause even if engaged on the side of the minority. Still this method is not to be recommended to a beginner, who may make many sad mistakes in attempts to produce effect. Let sound reasoning and plain statement have precedence, and the use of the weapons will be found in time.

The use of the exordium is to enable us to state (if necessary) why we speak, and *on what subject* we purpose speaking. If the subject is already fixed, then the speaker is bound, as a rule, to state distinctly what line of arguments he intends to pursue—which *side* he intends to advocate, for it is quite illegitimate to catch your audience in a trap and gain convictions by appearing to agree with those whom you purpose to oppose.

### A GREAT MAN'S BOOKS.

A recent visitor to the library of Daniel Webster, which remains at his old home in Marshfield just as he left it, after giving a full description of it, says, "Not an infidel work could be found among all his books. He never read such books. To the very close of his life, he retained that reverence for the Bible and the religion it inculcates, which his excellent parents taught him in infancy. The mute counsellors with whom he communed in retirement, still show how he thought, how he studied, and what opinions he cherished. A better selection of books to make one wise and good could scarcely be made."

### CELEBRATED MEN AND THE WEIGHT OF THE BRAINS.

The brain is the great centre of the nervous system. From it passes a double set of nerve lines, which divide and sub-divide until they pervade the whole fabric. Cuvier's brain was enormous, it weighed 65 ounces; Dr. Abercrombie's, of Edinburgh, weighed 63 ounces; Lord Byron's was also very large, being 64 ounces; and Dr. Chalmers', 53 ounces. It is rather singular that the brain of Dr. Chalmers, who is justly celebrated for his attainments and profundity, should (comparatively speaking) be so much lighter than that of either of the

\* This is also Dr. Workman's experience at the Provincial Lunatic Asylum, Toronto, where pictures are also hung on the walls.

above mentioned celebrities; but if wanting in quantity, his works prove that the quality was of no ordinary kind. The skull of Rush was prodigious, measuring 24 inches in circumference, and the skull of Burns measured 22½ inches.

THE RACES OF MAN.

Dr. Charles Pickering, an English author of a book entitled as above, describes eleven distinct races of men, founded on what he deems essential differences. He thus enumerates them, and the population of each race:—White 350,000,000; Mongolian, 300,000,000; Malayan, 120,000,000; Telingan, 60,000,000; Negro, 55,000,000; Ethiopian, 5,000,000; Abyssinian, 8,000,000; Papuan, 3,000,000; Australian, 500,000; Hottentot, 500,000. Total, 900,000,000. Dr. Pickering argues that the human race radiated from four centres: one from Thibet, in Asia; two from Abyssinia, in Africa; three and four from North and South America.—*Newark Advertiser.*

AN ARCHÆOLOGICAL PROBLEM SOLVED.

Letters from Vienna state that the ancient Runic inscription on the celebrated marble lion from the Piræus at the gate of the Arsenal at Venice, which has hitherto baffled the attempts of the most learned antiquarians to decypher, has at length found its Ædipus in the person of a learned Danish professor, who assures us that it records one of the most daring expeditions ever undertaken by Vikings of the North, under Harold Sigurson, the half-brother of King Olaf the Sainted, in the year 1040. The bold chieftain, it appears from the inscription, proceeded with his adventurous band of Norsemen to the assistance of the Greek Emperor against a popular revolution; and succeeded in capturing the Piræus, restored order, and obliged the Greeks to pay a heavy fine. It must, however, be added that the above-named date is an hypothesis of this "learned Theban," for there is no date in the inscription, and history makes no mention of the event alluded to.

EVEN THE NAME OF AMERICA FAULTY.

Having had occasion to look over some of the most rare Incunabula of the travels of Amerigo Vespucci, I find that his Christian name was Emmericus, the German St. Emmerich, which was only Italianized into Amerigo. Alexander Humboldt has shown in his *Examen Critique* how it was that the name was given to America by one who was not its discoverer. But as even *this* name is one of faulty construction, let us henceforth exclaim "Hail Columbia!"—*Notes and Queries.*

THE AUTHOR OF THE HUNDREDTH PSALM.

The long disputed question whether Purcell or Handel was the author of the grand music of the Old Hundredth, has been set at rest by a discovery made a few days since in Lincoln Cathedral library. Purcell died in 1695, and Handel in 1759. But in the cathedral library a French psalter, printed in 1546, contains the music of the Old Hundredth, exactly as it is now sung; so that it could not be the production of either of the great musicians to whom it has been attributed.

POETS GRAVES.

Chaucer was buried in the cloister of Westminster Abbey, without the building, but removed to the south isle in 1555; Spencer lies near him; Beaumont, Drayton, Cowley, Denham, Dryden, Rowe, Addison, Prior, Congreve, Gay, Johnson, Sheridan and Campbell, all lie within Westminster Abbey. Shakspeare, as every one knows, was buried in the chancel of the church at Stratford, where there is a monument to his memory. Chapman and Shirley are buried in St. Giles, in the Fields; Marlowe in the churchyard of St. Paul's Deptford; Fletcher and Massinger in the churchyard of St. Saviour's, Southwark; Dr. Donne in old St. Paul's; Edm. Waller in Beaconfield churchyard; Milton in the church rd of St. Giles, Cripplegate; Butler in the churchyard of St. Paul's, Covent Garden; Otway, no one knows where; Garth in the churchyard at Harrow; Pope in the churchyard at Twickenham; Swift in St. Patrick's, Dublin; Savage in the churchyard of St. Peter's, Bristol; Parnell at Chester, where he died on his way to Dublin; Dr. Young, at Walwyn, in Hertfordshire, of which place he was the rector; Thompson in the churchyard, at Richmond, in Surry; Collins in St. Andrew's Church at Colchester; Gray in the churchyard at Stoke-Pogis, where he conceived his "Elegy;" Goldsmith in the churchyard of the Temple Church; Falconer at sea with "all ocean for his grave;" Churchill in the churchyard of St. Martin's, Dover; Cowper in the church at Dereham; Chatterton in a churchyard belonging to the parish of St. Andrew's, Holborn; Burns in St. Michael's churchyard, Dumfries; Byron in the church at Hucknall, near Newstead; Crabbe at Trowbridge; Coleridge in the church at Higgate; Sir Walter Scott in Dryburgh Abbey; Southey in Crossthwaite church, near Keswick; Shelley "beneath one of the antique woodgrown towers surrounding ancient Rome;" and Keats beside him, "under the pyramid which is the tomb of Cestius."

Useful Facts and Statistics.

VENTILATION—AIR POISON.

The following remarks, copied from "Dickens' Household Words," show the vast importance of thorough ventilation in school-rooms:—"People have often said that no difference can be detected in the analysis of pure and impure air. This is one of the vulgar errors difficult to dislodge from the public brain. The fact is, that the condensed air of a crowded room gives a deposit which, if allowed to remain for a few days, forms a solid, thick glutinous mass, having a strong odour of animal matter. If examined by the microscope, it is seen to undergo a remarkable change. First of all, it is converted into a vegetable growth, and this is followed by the production of animalcules; a decisive proof that it must contain organic matter, otherwise it could not nourish organic beings. This was the result arrived at by Dr. Angus Smith, in his beautiful experiments on the air and water of towns; wherein he showed how the lungs and skin gave out organic matter, which is in itself a deadly poison, producing headache, sickness, disease, or epidemic, according to its strength. Why, if "a few drops of the liquid matter, obtained by a condensation of the air of a foul locality, introduced into the veins of a dog, can produce death with the usual phenomena of typhus fever," what incalculable evil must it not produce on those human beings who breathe it again and again, rendered fouler and less capable of sustaining life with each breath drawn! Such contamination of the air, and consequent hot bed of fever and epidemic, is easily in the power of man to remove. Ventilation and cleanliness will do all, so far as the abolition of this evil goes, and ventilation and cleanliness are not miracles to be prayed for, but certain results of common obedience to the laws of God."

THE FIVE GREAT LAKES OF NORTH AMERICA

Have recently been surveyed, and it is found that they cover an area of 90,000 square miles. The total length of the five lakes is 1,534 miles. Lake Superior, at its greatest length, is 355 miles; its greatest breadth is 160 miles; mean depth 968 feet; elevation above the sea 627 feet; area 32,000 square miles. Lake Michigan is 360 miles long; its greatest breadth is 108 miles; its mean depth is 900 feet; elevation 687 feet; area 20,000 miles. Lake Huron, in its greatest length, is 200 miles; its greatest breadth is 160 miles; mean depth 300 feet; elevation 574 feet; area 20,000 square miles. Lake Erie is 250 miles long; greatest breadth 80 miles; mean depth 200 feet; elevation 555 feet; area 6,000 square miles. Lake Ontario has a length of 180 miles; and its mean breadth is 6 miles; mean depth 500 feet; elevation above the ocean 262 feet; area 6,000 square miles.—*National Intelligencer.*

RAILROADS IN CANADA.

	Miles.		Miles.
Buffalo and Lake Huron.....	84	Grand Trunk—Toronto Section	208
Champlain and St. Lawrence..	43	Grand Trunk—Toronto & Sar-	
Cobourg and Peterboro'.....	28	nia.....	91
Erie and Ontario.....	17	Great Western—Main Line...	229
Grand Trunk—Montreal Divi-		Gt. Western—Toronto Branch.	38
sion.....	119	Gt. Western—Guelph Branch.	17
Grand Trunk—Quebec Divi-		London and Port Stanley....	27
sion.....	94	Montreal and New York....	42
Grand Trunk—St. Thomas Sec-		Ontario, Simcoe and Huron...	96
tion.....	50	Ottawa and Prescott.....	54
Grand Trunk—Brockville Sec-		Port Dalhousie and Thorold..	6
tion.....	125		
Total open to traffic.....	1,368		

The above table is believed to be a correct statement of the mileage in operation in the Province of Canada, on the 30th September, 1856. Besides these, there are several other lines, or extensions of lines, already partially finished, rapidly progressing to completion: as that between St. Mary's and London, and between London and Sarnia; that portion of the Guelph Branch, between Guelph and Preston; the Ottawa and Brockville line, and numerous others which, in the aggregate, will give the province at least one mile to every 1,000 inhabitants, or about 2,800 miles. The United States has already a mile of railroad to each 1,000 persons, or about 28,000 miles. The ratio of population to extent of surface is about equal—the absolute area and population of the United States being not far from ten times that of Canada. Hence, relatively, the United States possess a mileage of railroad double that of Canada at the present day.—*Life Illustrated.*

THE VICTORIA BRIDGE, MONTREAL.

The following interesting account of the immense bridge now being built across the St. Lawrence at Montreal, is from the correspondence of a Pittsburg paper.

"The Victoria Bridge, at the point where it is to cross the St. Lawrence, is two miles in width. The current is very rapid, and the water from four to ten feet in depth along where the piers are to be erected,

except in the main channel, where it is from thirty to thirty-five feet deep. In the winter the ice makes to a great thickness, and piles up with deep snows, under which the waters have to wear their way on to the ocean. Spring comes; the vast bodies of snow which have collected in all this river basin melt and pour into the common receptacle. The floes and boulders of ice are driven up in vast piles thirty and forty feet in height, through which the water roars and boils and surges, driving them onward at a fearful rate and crushing all before them. As far as the eye can reach up and down the river, one sees nothing but this raging flood of ice grinding and heaving, and behind, the floods pouring onward, driving along trees, rocks, timber, and debris which have gathered in its long journey. The quay of Montreal would not stand against this for an hour, were it not built in the most substantial manner. Docks are made for vessels in which they are protected from the descending fury. Well, the Victoria Bridge plants its broad bases in the very midst of this 'ice movement.' It has to breast all this fury. The abutments and approaches at each end occupy 3,000 feet in length, and are nearly completed. The abutments proper are of stone with hollow chambers, and the approaches of mixed earth and stone. Nine piers are completed of the twenty-four which will make up the whole number.

"These piers are fixed to the river bottom in the following manner: A coffer-dam is sunk; steam pumps exhaust the water within it; all loose material is then removed from the bed of the river, thus laid bare, until the solid body of rock is reached. Upon this, hewn stones, weighing fourteen tons, are fixed. Through these are passed iron bolts which go to a great depth into the solid rock. The next layer is fastened upon the first with cement and bolts of iron, and so on to the top. The whole is thus made one mass of stone and iron. The whole Titanic structure will be 10,292 feet in length, or nearly two English miles. As we have remarked above, about 3,000 feet are made upon the shores. There remains therefore for the bridge proper, 7,000 feet, or nearly a mile and one-third. How then is this vast sheet of water, flowing swift, and sometimes piled to the height of 30 feet with huge masses of ice, to be spanned? We find 24 stone piers, standing 242 feet apart, perpendicular on three sides, and sloping down to the water's edge. In exception, however, to this general statement, it should be observed that the centre span is 339 feet wide, for the purpose of navigation, and is bounded by piers much larger than the others. Resting, without other support, on these piers, and running from abutment to abutment, is the bridge, consisting of a great hollow iron tube, 22 feet high in the middle by 16 wide, and descending to 19 feet high at the two ends. The centre span is to be 50 feet above the average level of the water, thence sinking gradually toward either end, 1 foot in 130, thus making the height of the abutment about 87 feet. And so, in these terminal masses of masonry, in these 21 colossal piers, breasting for all time the floods of the St. Lawrence, in this enormous tube of iron through which loaded trains will shoot like a weaver's shuttle—you have the Victoria Bridge, the wonder of the world. Statistics can not enhance our admiration; still we add, that the estimated cost is over \$6,000,000, that the weight of iron in the tubes only will be 8,000 tons, and that the contents of the masonry will be 3,000,000 cubic feet. The whole will be complete in the fall of '59 or in the spring of '60."

DISTANCES ACROSS THE ATLANTIC.

The Boston Post gives the following as the correct distances across the Atlantic by the various routes (circle sailing) as furnished it by Lieut. Maury:—

	Geographical miles.
Philadelphia [via Delaware Capes] to Liverpool	3090
New York to Southampton	2980
New York to Liverpool	2880
New York to Glasgow	2800
Boston to Liverpool	2720
Boston to Belfast	2620
Boston to Galway	2520
Cape Race to Galway	1730
The distance then from Boston to Liverpool is shorter than from Philadelphia to Liverpool, by	370
New York to Southampton, by	460
New York to Liverpool, by	160
New York to Glasgow, by	180
The distance from Boston to Galway is shorter than from Philadelphia to Liverpool, by	570
New York to Southampton, by	460
New York to Liverpool, by	360
New York to Glasgow, by	280
The distance from Boston to Galway is shorter than from Boston to Liverpool, by	200
Boston to Belfast, by	100

PUBLIC LIBRARIES IN THE UNITED STATES.

We find in the Publishers' Circular the following list of the public libraries in this city, and the number of volumes belonging to each of them:—

	VOLS.
Astor Library	80,000
New York Society Library	40,000
Mercantile Library Association	47,000
New York Historical Society	25,000
Apprentices' Library	18,000
Library of Free Academy	15,000
New York Law Institute	6,000
Library of American Institute	7,500
" Columbia College and Literary Society	24,000
" Union Theological Seminary	24,000
" Episcopal Theological Seminary	12,000
" Lyceum of Natural History	3,000
" New York Hospital	6,000
" Young Men's Christian Association	2,000
" Mechanics' Institute	3,000
Printers' Free Library	4,000
Library of College of Physicians and Surgeons	1,500
" American Bible Society	1,500
" Presbyterian Board of Foreign Missions	3,000
" American Bible Union	4,000
" American and Foreign Bible Society	1,000
Merchants' and Clerks' Library Association	600
New York City Library	2,000
Library of American Geographical Society	300
" Springler Female Institute	2,000
" Rutgers' " "	2,190
" New York University and Literary Societies	2,700
Total	837,290

The 11,748 public school libraries of our state contain, in the aggregate, according to the last report of the Superintendent of Public Instruction, no less than 1,505,370 volumes. Nothing like this has yet been attempted in any country, if we except the effort made to establish libraries for teachers in France. There can be no doubt that in small collections and general diffusion of books, the United States is ahead of any country in the world. The Paris National Library is said to contain 824,000 volumes; Munich Royal, 600,000; St. Petersburg Imperial, 446,000; Copenhagen Royal, 412,000; Gottengen University, 360,000; Berlin Royal, 500,000; and the London British Museum, 490,000.

THE LAW LIBRARY OF NEW YORK.

The Law Library of New York numbers at present about six thousand volumes. The Law Institute partakes of the character of a close corporation. Only certain persons are entitled to admission to its privileges, and these only under peremptory rules and regulations.

There is probably no law library in the country which has upon its shelves so rich and valuable a collection of rare works on legal topics. The catalogue comprises a very full collection of reports of cases in the American, English, Scotch and Irish Courts; sets of American and English Statute Law; the publications of the English Record Commission; and, in addition to the less rare and curious volumes which are set forth in all the glory of fresh sheepskin, there is a set, nearly complete, of English reports from the year 1216 (reign of Henry III.) down to the present time. The Statepapers of England and America are a feature of this institution of peculiar value. Among the documents pertaining to American history are the charters of the American colonies, Congressional papers from 1791 down to the present time, and New York State papers since 1691. The English and Irish records, in which this library is peculiarly full and rich, contain complete accounts of the foundation of British and American law. The early laws of the Anglo-Saxons, those of England under William the Conqueror, the laws ascribed to Henry I., and the "Monumenta Ecclesiastica," from the 7th to the 10th century, are among the documents which will be found to possess interest and attraction—not for the lawyer only, but for the antiquarian as well.—*American Publishers' Circular.*

CLERKS AND SALARIES IN BANK OF ENGLAND.

There is some philosophy in the plan adopted by the Bank of England in allowing clerks "to work their way up" to a good position, and a living salary. A clerk in the Bank of England enters at the age of seventeen, on a salary of \$150 a year, with an additional hundred if he is punctual every morning. His salary is increased \$50 every year, till his income reaches \$400. It is then raised \$25 a year, till it reaches an annual salary of \$500. From that time the salary is increased at the rate of \$40 a year, till the gentleman has

worked his way up to the comfortable income of \$1,800. But this is not all. Every employee of the bank is entitled to a retiring pension of an amount proportioned to the number of years he has served. After forty years' service, we believe, a clerk is entitled to retire upon a pension equal to the amount of the salary which he enjoyed at the time of his retirement. When a clerk is absent on leave, he forfeits 88 cents per day—an arrangement which has the double advantage of securing the bank from imposition, and of giving a modest man the courage to ask for leave of absence when it is necessary. Indeed, the system generally seems to us the only one by which faithful service can be rationally expected.

HISTORY OF THE PENNY.

The ancient English penny was the first silver coin struck in England, and the only one current among our Saxon ancestors. At the time of Ethelred it was equal in weight to our threepence. Till the time of King Edward I. the penny was so deeply indented that it might easily be broken and parted, on occasion, into two parts—these were called halfpence; or into four, these were called fourthings or farthings.

NUMERICAL SINGULARITIES.

There is a curious property of the number 9, which was discovered, it is said, by the celebrated Fontenelle. He found that, if 9 be multiplied by 2, by 3, by 4, by 5, by 6, by 7, by 8, by 9, &c., the figures expressing the product of each of these several multiplications, when added up together, will always give 9. For example:

Two	9	are	18	...	1	and	8	are	9
3	times	9	"	27	...	2	"	7	"
4	"	9	"	36	...	3	"	6	"
5	"	9	"	45	...	4	"	5	"
6	"	9	"	54	...	5	"	4	"
7	"	9	"	63	...	6	"	3	"
8	"	9	"	72	...	7	"	2	"
9	"	9	"	81	...	8	"	1	"

This multiplication and addition might be carried on for ever, and the result would still be the same; the figures denoting the product, when added up together, giving in every instance 9 or a multiple of 9; such as 108, 117, 126, 135, 144, 153, 1,608, 1,017, &c. This property is peculiar to the number 9.

Another singular property of this number must not be forgotten. If you reverse the order of the figures denoting this number, the difference between the two numbers, so changed, will always be 9. For example: I take the number 21; I reverse the order of the two figures and I have 12. Well, the difference between 12 and 21, will be 9. Again, of 52 I make 25, and the difference between the two numbers will be 27, a multiple of 9. The number 13 reversed gives me 31, and the difference between the two numbers is 18, or twice 9.

It is to be observed that this property of the two numbers reversed in order, belongs to every power of the same numbers. Take for example 21 and 12: the square of 21 will be 441, and the square of 12 will be 144. Now the difference, 297, is a multiple of 9; and moreover, the figures of the two numbers denoting those powers, when added up together, will make 9. If we go on to the cube, we find that the cube of 21 is 9,261, and that of 12 is 1,728: and the difference between is a multiple of 9, and yet they are not formed of the same figures. All the other powers of 21 and 12 follow the same rule.

Property of the number 27.—The number 37 multiplied by 3, or by any multiple of 3 up to 27, has the property of always giving as its product three figures exactly alike. The knowledge of this property facilitates, by shortening the multiplication of the number 37 by any number not exceeding 27; nothing more being necessary than to multiply the first figure of the multiplicand by the first figure of the multiplier, and when the figure denoting the unit is thus found, to repeat the same figure both for the tens and the hundreds, and the three figures will invariably be found to be the right product. Moreover, these three figures, when added up together, will be of the same amount with the multiplier, as may be seen in the following table of the multiplication of 37 by 3, 6, 9, &c., up to 27:

37	multiplied	by	3	gives	111	...	3	times	1	are	3
37	"	"	6	"	222	...	3	"	2	"	6
37	"	"	9	"	333	...	3	"	3	"	9
37	"	"	12	"	444	...	3	"	4	"	12
37	"	"	15	"	555	...	3	"	5	"	15
37	"	"	18	"	666	...	3	"	6	"	18
37	"	"	21	"	777	...	3	"	7	"	21
37	"	"	24	"	888	...	3	"	8	"	24
37	"	"	27	"	999	...	3	"	9	"	27

But this rule only holds good in multiplying from 3 to 27.—Boys Own Journal.

SINGULAR AND USEFUL FACT CONNECTED WITH THE FIGURES 25 AND 75.

It may not be generally known that any sum can be multiplied by 25 by simply adding two ciphers to the multiplicand, or sum to be multiplied, and then dividing by 4. Take, for example, 68 and multiply it by 25; two ciphers being added make it 6800, which sum being divided by 4 gives the quotient or answer, 1700. The reason why the amount is thus obtained is as follows: two ciphers being added to 68 have exactly the same effect on that sum as if it were multiplied by 100, and that sum multiplied being divided by 4, gives the 4th part, or amount due to 25. Any sum may also be multiplied by 75 by the same rule, in the following manner: To the sum to be multiplied, say 68, add two ciphers, which make 6800; divide by 4, which gives 1700 or 4th part, and the 1700 or 4th part, being subtracted from the aforesaid 6800, leaves the remaining three-fourths or amount due to 75.

Educational Intelligence.

CANADA.

MONTHLY SUMMARY.

LOWER CANADA JOURNALS OF EDUCATION.—Since the publication of the January Number of this Journal, a French and English Edition of the *Lower Canada Journal of Education* has made its appearance. The first Numbers issued are double Numbers. This has been rendered necessary from the desire of the Chief Superintendent to present in complete detail the measures which have been adopted to carry into effect the Provisions of the recent Acts for the Promotion of Education in Lower Canada,—including the establishment of a threefold Normal School, and the publication of a French and English Journal of Education, &c. A View of the Jacques Cartier and McGill Normal Schools is given in the respective Numbers.

We hail, with great satisfaction, the appearance of these Journals; and feel assured that they cannot fail, under the able management of Mr. Chauveau and his efficient co-Editors, to accomplish great good in the promotion of the noble cause to which they, in common with our own Journal, are specially devoted.

— CONVOCATION, &c., UNIVERSITY OF TORONTO. On the 4th inst., a deputation, consisting of the Hon. Mr. Patton, B.C.L., President of the University Association, and Messrs. Crooks, M. A.; Smith, D. C. L.; Hodgins, B.A.; Morris, M.A.; Blake, B.A.; Wedd, M.A.; Nicol, M.D., members of the Executive Committee, and other graduates, proceeded to the Government House and presented a memorial to the Governor General, praying for the restoration of Convocation and the Faculties of Law and Medicine. His Excellency replied verbally, that he could not give a more formal answer to the Memorial than that the subject of it would receive his most serious consideration; that the present constitution of the University was not dependent upon the action of the Government, but upon the state of the law amending the original charter; and that any arrangements which the wisdom of Parliament saw fit to make on the subject, the Government were bound to carry out in the best manner. His Excellency made some further remarks on the powers of the Convocation of the University of Oxford, and the deputation then withdrew.

— SENATE OF THE UNIVERSITY OF TORONTO. His Excellency the Governor General has been pleased to appoint H.H. Croft, Esq., D.C.L., Professor of Chemistry and Experimental Philosophy, University College, Toronto; John B. Cherriman, Esq., M. A., Professor of Natural Philosophy, University College, Toronto; Daniel Wilson, Esq., LL.D., Professor of History and English Literature, University College, Toronto; the Rev. John Jennings; the Honourable James Patton, B. C. L., and Oliver Mowat, Esq., Queen's Counsel, to be additional Members of the Senate of the University of Toronto.

— SCHOOL SECTION LIBRARIES. A teacher, writing from North Easthope, says "Our School Section Library is giving great satisfaction. Although this is only a small Section there have been nearly fifteen hundred readings during the first year; and we are now selecting from the Supplementary Catalogue with a view to send for more Books."

— MCGILL COLLEGE, MONTREAL.—Messrs John, William and Thomas Molson have given the munificent sum of £5,000 to found the "Molson Chairs of English Literature" in this University. The graduates of the

College have formed themselves into a Society, similar to the Association of the University of Toronto under the title of "The McGill University Society." Alexander Morris, Esq., M. A., is the President.

## BRITISH AND FOREIGN.

### MONTHLY SUMMARY.

**OXFORD UNIVERSITY ACCOUNTS FOR 1856.**—From an abstract of the general accounts of the University for the year ending Nov. 6, 1856, prepared by the delegates of accounts and issued by the Vice-Chancellor, we find the total amount of payments is £28,172 against the receipts of £22,638, making a loss of £5,533 6s 11d in the year. The chief expenses of the University are as follow:—purchase of estate near the parks from Merton College, with interest for one year, £9,634; stipends due annually by statute or by decree of Convocation, £7,147 13s 8d; police account, Bodleian Library account, lighting and paying rates, and other payments, formerly charged on the university dues, £6,003 5s 1d; law charges, and other miscellaneous payments, £1,566 14s 6½d; returned to the Lords of the Treasury for the Parliamentary grant to the professors, paid in error for the year 1855, £890 9s 4d; payments fixed by ancient custom or decree of Convocation, £7,91 18s; grants of money by decree of Convocation, £784 9s; schools account, £532 2s 2d. Balance in favour of the University, Nov. 6, 1855, £8,666 4s 2½d; receipts for the year 1856, £22,638 14s 5½d; making a total of receipts of £31,304 19s 8½d. Deduct payments for the year, £28,172 0s 4½d; leaving a balance in favour of the University, Nov. 6, 1856, of £3,132 18s 3½d.

— **WORKING MEN'S COLLEGE AFFILIATED.**—The Senate of the University of London have resolved to admit the Working Men's College in the University.

— **MEDICAL STUDENTS—LONDON.**—The number of medical students now pursuing their studies at the various metropolitan hospitals amounts to 1,080.

— **DEATH OF DR. PARIS.**—It is with very sincere regret that we announce the death of this excellent and distinguished man. Few men have run so long and at the same time so honorable a career. For half a century precisely, Dr. Paris had practised as a physician and had risen to the very highest honors which it was in the power of his professional brethren to bestow. He was born at Cambridge.

— **QUEEN'S COLLEGE, IRELAND.**—A late London *Gazette* contains the appointment of the Commissioners to inquire into the progress and condition of Queen's Colleges at Belfast, Cork, and Galway respectively. They consist of the Marquis of Kildare, Sir T. N. Redington, B. Price, Esq., and J. Gibson, Esq.

— **INDEPENDENT COLLEGE AT HALIFAX.**—It is proposed to erect, near Manchester, a new Congregationalist College, at a cost of £20,000. The Halifax *Guardian*, referring to this project, says:—"The liberality of the Messrs. Crossley, of this town, seems to know no bounds. This week John Crossley, Esq., has commenced preparations for erecting a college which, when completed, is to vie with the schools at Harrow and Rugby, and other equally celebrated scholastic establishments. We have not seen the plans for the architectural elevation, but we understand the college will be a massive building, with a large spire and four small towers, and, from its elevated position, will form a grand object for observation for many miles round. When completed, there will be ample accommodation for 130 pupils, and nine resident masters, with the principal. The large dining hall will be on the south side of the college, and from its windows a most extended view of the neighbouring hills will be obtained. The school-room is on the opposite side of the college, and both rooms are to be perfect gems. Commodious class-rooms, baths, lavatories, museum, and library are to occupy the ground-floor, all of which will be communicated with by a spacious corridor lighted from the roof. This munificent and princely gift to the town and neighborhood cannot be too highly estimated.

## Literary and Scientific Intelligence.

— **SCIENCE IN FRANCE.**—The prize of thirty thousand francs instituted by the Emperor of the French for the most notable discovery in science, has been awarded to M. Fizeau for his experiments and demonstrations on the rapidity of the movement of light.—M. Carrere has shown to the Academy that Newton's rings may be reproduced by letting fall on water a drop

of a solution of bitumen of Judea, with benzine and naphtha. It is a curious optical experiment, and the more so, as the film may be taken off the surface of the water on a sheet of paper, and kept, when dry, for permanent observation.—The French Government have established a system of meteorological observations for the whole of France, and observations are now sent every day to the central observatory at Paris; five meteorological observatories are also to be started in Algiers, three on the coast and two in the interior, whereby some knowledge will be arrived at of the atmospheric and other climatic phenomena of that part of Africa.—The spongy metals discovered by M. Chenet are found applicable to purposes for which castings have hitherto been used. The metal is subjected to hydraulic pressure, and any variety of form and surface may be produced, solid and durable, with great economy of time and expense.

— **ANOTHER METAL DISCOVERED.**—Dr. Hoffman, following in the wake of Davy and Deville, has come forward as a discoverer of metal. In a lecture delivered by him lately at the British Royal Institution, he exhibited a bright glistening mass, something resembling butter, and described it as ammonium—the metallic base of ammonia. This is regarded as a highly interesting chemical fact, inasmuch as it strengthens the views entertained respecting the constituents of the atmosphere, viz: that they are all metallic.

— **MARBLEIZING PLASTER OBJECTS.**—Objects in plaster of Paris are now rendered like marble, by coating them, one or more times, with a liquid of two parts stearine and two parts Venetian soap, with 20 or 30 parts of cold solution of caustic potassia; then add one part of pearlash, and cold ley sufficient to produce perfect flexibility.

— **AMERICAN PATENTS IN 1856.**—It appears from the classification of patents granted last year, that New England, with about one-ninth of the population of the country, has nearly a third of the patents. New York, with about one-eighth of the population, has also nearly a third, and more than all New England. Pennsylvania, Ohio, and New Jersey, among the other States, are those which exhibit the greatest inventive activity. More patents have been granted to residents of the District of Columbia, in proportion to the population, than to any other territory.

— **REVOLVING OBLITERATING STAMP.**—The Postmaster-General has been pleased to grant Mr. John Gilchrist, a stamper in the General Post-office, Edinburgh, a gratuity of £10, in consideration of that officer's zeal and ingenuity in bringing to perfection a revolving obliterating stamp.

— **LIGHTNING RODS ATTRACTING LIGHTNING.**—Sir Snow Harris has made a valuable scientific report to Parliament, in which he refutes the fallacy of the unphilosophical assumption that lightning rods "attract" the lightning, and so act as efficient safeguards. It is proved by an extensive induction of facts, and a large generalization in the application of metallic conductors, that metallic substances have not exclusively in themselves any more attractive influence for the agency of lightning than other kinds of common matter; but that, on the contrary, by confining and restraining the electrical discharge within a very narrow limit, the application of a small rod or wire of metal to a given portion of a building is in reality highly objectionable.

— **NOVEL METEOROLOGICAL THEORY.**—The late fearful inundations in France have set the philosophers and savans of Paris to speculating upon the probable causes of a calamity which, with more or less violence, afflicts the country periodically. At a late sitting of the Academy of Science, an essay was read on the subject, in which the idea was advanced that the overflows of the rivers are chiefly occasioned by the sirocco from Africa. It is conjectured that the hot blast in its course over the sea causes a rapid and copious evaporation, and that the vapors are carried by it and finally condensed amid the cold atmosphere of the mountains in the centre, East and South of France, where they descend and flow into the plain and valleys in fierce torrents, whose volume is swollen by the waters of the melting snows. This is at least an ingenious and plausible theory, whatever may be its practical value.

— **INSTRUMENT FOR DETERMINING LATITUDE.**—An English mechanician has invented a very ingeniously constructed nautical instrument for accurately determining both latitude and longitude, without the assistance of a chronometer and without lunar observations—an observation of the sun only, being required.

— **BRITISH COMMERCE.**—No fact can more clearly show the enormous activity of British commerce than this—that the exports of our home produce and manufactures for eleven months of the past year exceed by £10,000,000 in value our similar exports for the whole of the preceding



year. The value of the produce and manufactures of the United Kingdom exported in 1855 amounted to £95,000,000; when the returns of 1856 are published, they will probably exhibit an increase of more than £20,000,000 for the whole year.—*Times*.

### Departmental Notices.

#### SPECIAL NOTICE TO TEACHERS.

Public notice is hereby given to all Teachers of Common Schools in Upper Canada, who may wish to avail themselves at any future time of the advantages of the Superannuated Common School Teachers' Fund, that it will be necessary for them to transmit to the Chief Superintendent, without delay, if they have not already done so, their annual subscription of \$4, commencing with 1854. The law authorizing the establishment of this fund provides, "that no teacher shall be entitled to share in the said fund who shall not contribute to such fund at least at the rate of one pound per annum." This proviso of the law will be strictly enforced in all cases; and intimation is thus early given to all Teachers, who have not yet sent in their subscriptions, to enable them to comply with the law, and so prevent future misunderstanding or disappointment, when application is made to be placed as a pensioner on the fund.

#### SCHOOL MAPS AND APPARATUS.

The Legislature having granted annually, from the commencement of 1855, a sufficient sum of money to enable the Department to supply Maps and Apparatus (not text-books) to Grammar and Common Schools, upon the same terms as Library Books are now supplied to Trustees and Municipalities the Chief Superintendent of Education will be happy to add one hundred per cent. to any sum or sums, not less than five dollars, transmitted to the Department; and to forward Maps, Apparatus, Charts, and Diagrams to the value of the amount thus augmented, upon receiving a list of the articles required by the Trustees. In all cases it will be necessary for any person, acting on behalf of the Trustees, to enclose or present a written authority to do so, verified by the corporate seal of the Trustees. A selection of articles to be sent can always be made by the Department, when so desired.\*

\* *The Form of Application should be as follows:*

SIR,—The undersigned, Trustees [*Reeve, or Clerk*] of \_\_\_\_\_, being anxious to supply the Section (*or Township*) with suitable school requisites, [*or library books*], hereby make application for the [*maps, books, &c.*], enumerated in the accompanying list, in terms of the Departmental notice, relating to maps and apparatus, [*or library books*]. The [*maps or library books*] selected are, *bonâ fide*, for the use of the school [*or municipality*]; and they hereby pledge themselves and their successors in office, not to dispose of them, nor permit them to be disposed of to any private party or for any private purpose whatsoever; but that they shall be appropriated exclusively to the use of the school, [*or municipality*], in terms of the Regulations granting one hundred per cent. on the present remittance.

In testimony whereof, the Trustees [*Reeve, or Clerk*] of the \_\_\_\_\_ above mentioned—hereto affix their names and seal of office this—day of \_\_\_\_\_, 185—, at \_\_\_\_\_

We hereby authorise \_\_\_\_\_ to procure for us the \_\_\_\_\_ above mentioned, \_\_\_\_\_ in terms of the foregoing application. \_\_\_\_\_

TO THE CHIEF SUPERINTENDENT OF EDUCATION, TORONTO.

NOTE.—A Corporate Seal must be affixed to the foregoing application, otherwise it is of no legal value. Text-books cannot be furnished on the terms mentioned above. They must be paid for in full at the net catalogue price. The 100 per cent. will not be allowed on any sum less than \$5, which must be remitted in one sum for either library or maps and apparatus.

### ILLUSTRATED HAND BOOK

OF THE GEOGRAPHY AND HISTORY OF BRITISH AMERICA,  
BY J. GEORGE HODGINS, M. A.

WILL be published about the first of May a HAND BOOK OF THE GEOGRAPHY AND HISTORY OF BRITISH NORTH AMERICA. This Hand Book is designed to accompany two Maps of the British Provinces, prepared by the author under the authority of the Chief Superintendent, for the use of the Public Schools of Upper Canada, and published in the Irish National, and W. & A. K. Johnston's, Series of Maps. In addition to the usual Geographical information, this Hand Book will contain a summary of the history of each of the British Provinces, and a short sketch of the lives of those individuals whose names are associated with our early Colonial history, &c. &c.

With numerous illustrations. Cloth, gilt, lettered, pp. about 70. Price about \$3 or \$3½ per dozen; 37½ cents each.  
Toronto, March 18th, 1857.

The Educational Directory & Calendar, for Canada, for 1857.  
EDITED BY THOMAS HODGINS,

B. A., UNIV. COLL., TORONTO.

Joint Editor of the Educational Manual for Upper Canada,

CONTAINING an Almanac of the dates prescribed by law, regulation or custom for the Common and Grammar Schools, Colleges, Universities, Law Societies, Medical Boards, Provincial Land Surveyors, &c., in Upper and Lower Canada,—and the following:

THE SCHOOLS.—Historical Sketch of the Grammar and Common Schools Education Departments and Officers for Upper and Lower Canada; Normal and Model Schools in ditto; Upper Canada Grammar Schools, and Lower Canada Colleges, and their Principals or Head Masters, and other Officers; subjects for Examination of Candidates for Masterships of Grammar and Common Schools, and for Provincial Certificates from the Normal School, &c. &c.; Local Superintendents and Inspectors of Grammar and Common Schools in Upper and Lower Canada; County Wardens, Treasurers and Clerks.

THE COLLEGES AND UNIVERSITIES.—Subjects for Matriculation, Scholarships, &c., and the Degrees, in the Faculties of Arts, Medicine and Law; Senates, Councils, Professors and other Officers of Instruction; Graduates, and Matriculated Students, with dates of their Degrees, &c.; Scholarships, Fees and Terms, &c., in the following Institutions: University of Toronto, University College, Upper Canada College, Victoria College, Queen's College, Trinity College, McGill College, University of Laval, Bishop's College; Regiopolis College, Bytown College, St. Michael's College, Knox's College, United Presbyterian Divinity Hall, Congregational Institute, &c., together with an historical sketch of each.

THE PROFESSIONS.—Subjects for Examinations of Law Students and Barristers; Regulations of Medical Boards, and of Provincial Land Surveyors in Upper and Lower Canada.

LITERARY AND SCIENTIFIC ASSOCIATIONS.—Provincial, Collegiate, and Metropolitan, and their Officers.

MEMORANDA.—Digest of the Decisions of the Courts of Queen's Bench and Common Pleas on School Questions, plans of School-houses, &c.

Price 1s. 3d. Will be published in a few days, and may be procured at the book stores.

### BAPTIST LITERARY INSTITUTE.

SUBSCRIBERS to the Literary Institute or Seminary about being erected at Woodstock, in connection with the Baptist Denomination, are hereby notified that the postponed meeting for the election of Trustees will take place at the Baptist Chapel, Woodstock, on Wednesday the 18th day of March next. A full attendance is particularly requested. Parties not having subscribed, but who may wish to do so, will have an opportunity at the meeting in question.

The meeting will take place at 1 o'clock, p. m.  
Woodstock, March 3, 1857.

### SCHOOL FURNITURE.

JACQUES & HAY continue to make School Desks and Chairs of the most approved patterns, and can execute orders promptly and at moderate prices. Toronto, March 3, 1857.

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All communications to be addressed to Mr. J. GEORGE HODGINS, Education Office, Toronto.

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