

otherwise it will require a miracle, or direct action on the part of God, to convert him; therefore the first and most essential point in educating is to lay the foundation on the sure basis of Catholicity; after this, teach anything you please, provided it is not opposed to the religion of Christ. The Doctor's pet theory is non-religious instruction at school, religious ditto at home, which would, of course, answer were all parents equally wellinformed; but suppose, as is frequently the case, that the parent, though sufficiently well grounded in his own faith, has not the gift of being able to instruct others, then the superiority of our system is shown, as the school supplies the deficiency. Faith first is our motto; and better an illiterate lot of the lowest class who has faith, than the most accomplished and refined of aristocrats without it. The ordinary godless school will train up an amiable and may be even learned person, but if moral and the possessor of lofty principles, not from love of his Creator. We might hold forth on this subject to an indefinite extent, did time or space permit. The *Canadian Freeman* has always been to the best of our humble abilities a consistent advocate of Catholic education, and in retiring from its management we would, as previously stated, wish to offer the right hand of fellowship to all we have encountered, either lukewarm friends or foes, to part on amicable terms with all from whom we have differed. Foremost among these is the Chief Superintendent of Education, and we have therefore devoted this, our last article, to him. We have written column upon column against him, for the past fifteen years. We have tried with all our might to put him down, and yet he is a man for whose talents, resolution and dogged perseverance we have the highest respect, for whose courtesy and gentlemanly bearing towards our co-religionists we offer our acknowledgments, and for whom the Protestant people of this Province will, at some not very distant period, do, what a learned American historian stated the North West would do for Marquette, "build his monument."—*The Editor of the Canadian Freeman*.

III. Educational Items.

Prof. Tyndal has been elected to preside over the next meeting of the British Association, to be held in Belfast, beginning on August 9, 1874.

An effort is making in England to meet by subscription the expenses of the action recently brought by the excluded lady students against the University of Edinburgh.

Pupils going through the regular course of the Atlanta, Ga., public schools, study Latin and French. Boys who are preparing to enter college take Greek and omit French.

The School Committee of Chelsea, Mass., has ordered that no teacher shall inflict punishment upon a pupil until after consulting with the sub-committee for his school.

Education in Ohio—if we are to believe Mr. Harvey, a speaker at the late Teachers' Institute—needs three things: A State Normal School, County Superintendency, and "township district" system.

The Chandler scientific department at Dartmouth was awarded the highest prize—a silver medal—for a collection of mechanical and free-hand drawings and herbariums at the recent State fair held at Manchester.

The Worcester, Mass., Academy, which has recently been remodelled and enlarged, has received subscriptions to its endowment fund to the amount of \$32,687. Of this sum \$39,687 remains to be collected or put in a substantial form.

It is a pleasure to note the recent Teachers' Institute at Rome, wherein all the lectures and lessons tended toward the new and bitterly longed for system of teaching pupils to understand and reflect, and not merely to remember.

The Teachers' Institute of Peoria, Ill., has been discussing the question of punishment in schools. One teacher thought that whipping was beneficial; another believed that the higher natures of children should be appealed to, and then said that corporal punishment was better than expulsion from the school; and another mentioned a glance of displeasure in the eye of the teacher.

Alexander Agassiz has received the grand Walker prize from the Boston Society of Natural History as a reward for his investigations in the natural history of the Echinoderms. This prize is awarded but once in five years, and for the most important investigation in Natural History within that period, the results of which have been published in the United States one year previous to the award. Two sums are at the command of the Council, \$500 and \$1,000, the latter of which was in this case unanimously voted.

Professor A. D. White, of Cornell University, made the other day a speech in defence of scientific education, before the Teachers' Institute at Binghamton. While praising agricultural colleges and scientific farming, he stated that little Portland county during the past year had received from the sale of butter alone \$1,500,000, which speaks well for a learned and intelligent management of dairies. In reference to religion and science, he said that religion has been made grander and deeper by the triumph of science.

According to the report of Senor Flores, Minister from Ecuador, there are in that republic five national colleges, with 757 students. There are six feminine seminaries under the control of Catholic Sisters, having 741 students. At Quito, the capital, there is a polytechnic school with nine professors; besides there are colleges of law and medicine and a school of trades—the latter after the model of the Catholic Protector, at Westchester, N.Y., in which sixteen American mechanics are engaged as practical instructors. A good elementary education is also furnished.

IV. Mathematical Department.

1. FIRST CLASS ALGEBRA PAPER.

Solution of the 10th question in the First-class Algebra Paper (Examination of Public School Teachers, July, 1873).

Find a number which is greater by unity than n times the integral part of its square root; n being a whole number.

Let x be the integral part of the square root, and d the decimal part. Then

$$x^2 + 2dx + d^2 = nx + 1.$$

$$\therefore x(x - n + 2d) = 1 - d^2.$$

Since $1 - d^2$ is positive, therefore $x - n + 2d$ is positive. Now, first, suppose if possible $x < n - 1$. Therefore, since x and n are whole numbers, x is not $7n - 2$. $\therefore x - n + 2d$ not $72(d - 1)$: which, since $d - 1$ is negative, and $x - n + 2d$ has been shown to be positive, is impossible. Next, suppose if possible $x \geq n$. $\therefore x$ not $< n + 1$. Therefore,

$$x(x - n + 2d) \text{ not } < x(1 + 2d)$$

$$\therefore 1 - d^2 \text{ not } < x(1 + 2d):$$

Which, since $1 - d^2 < 1$, is impossible. Therefore the only two values which x can have, are n and $n - 1$, and the required number is either $n^2 + 1$, or $n(n - 1) + 1$.

G. P. Y.

2. MATHEMATICAL PROBLEMS.

1. Extract the square root of a given straight line AB.
2. How many terms of the squares of the numbers 1, 2, 3, 4, &c., must be added, that the sum may be a rational square number?
3. At the bottom of a lake, a globe of elastic and condensable matter is known to be 2 inches in diameter, and at the surface 10 inches; required the depth of the lake.
4. Prove that the expressions,

$$\frac{-1 + \sqrt{-3}}{2} \times a, \text{ and } \frac{-1 - \sqrt{-3}}{2} \times a,$$

are cube roots of a^3 .

5. Detect the mistake in the following process:

Let $a = b$; $a^2 = ab$, or $a^2 - ab = 0$, and $a^2 = b^2$, or $a^2 - b^2 = 0$; thence $a^2 - ab = a^2 - b^2$, or $a(a - b) = (a + b)(a - b)$, or $a = a + bb = a$, then $a = a + a = 2a$ and $1 = 2$.

6. From what do the following absurdities arise?

$x^n + x^{n-1} = c$; multiply each side by $x^n - x^{n-1}$, $x^{2n} - x^{n-1} = cx^n - cx^{n-1}$; transpose, complete the square, &c., $x^n = x^{n-1}$. Again, $x^n + bx^{n-1} = c$; multiply by $x^n - bx^{n-1}$, $x^{2n} - b^2 x^{2n-$