MILLAR'S "MARMION."

Afraid to venture on a criticism of Mr. Millar's high school edition of "Marmion" and the "Reflections," in the columns of their own journal, the clique who run it have taken refuge in the columns of one of the daily papers in this city. We do not propose to notice in detail criticisms so reckless that they could not have found a place in the columns even of the *Educational Monthly*, especially since the latter has made the discovery that it vegetates in a very frail glass house. Sneers about style will not for some time to come be very common in its columns; but anything is good enough, apparently, for a daily paper. That we have traced the critique to its true source is manifest from the fact that numbers of the issue containing it were sent to high school masters in different parts of the province. In view of this attempt to injure Mr. Millar, we have much pleasure in calling attention to the character of the notices contained in one of our advertising pages. We venture to say that no stronger or more commendatory remarks have ever been made by so many competent judges about any book ever published in this country. Mr. Millar has indeed good reason to feel gratified with the warm appreciation of his editorial labours by his fellow-teachers, and, for the information of others, we have only to add that he has further cause for gratification in the fact that his is the only edition of "Marmion" which finds its way, to any considerable extent, into the schools. This is the real source of the bitter animosity shown towards him by those who are interested in less salable editions.

—A correspondent of the London (Eng.) *School Guardian* recently gave amongst other reasons why the Kindergarten system should not be adopted in the Church of England schools, the following two which are worthy of special notice: (1) that Froebel's system is detrimental to the infant mind from the religious point of view, and (2) because it is not calculated to give the best intellectual training. Religious truth, he holds, is the most important of all, and as that can be communicated only by dogmatic teaching, it is a bad thing to train children to believe only what is demonstrated to them. "A questioning and reasoning spirit," he says, "is quite the last phase of mind I should wish to cultivate in infants." If this were the view taken by the church school teachers generally we should expect those schools to decline very rapidly in popularity and efficiency. He does not "approve of the idea that lessons should be so easy." It is only by being allowed to surmount difficulties that the child can be trained for the duties and trials of life which it will have to face sooner or later without assistance. There are ways and ways of teaching pupils to surmount difficulties, but it is safe to say that those practised by a good Kindergarten constitute not the least effective training for after life.

The first requisite is to teach the child to recognize words. Forming sentences goes hand in hand with the learning of new words; these sentences are written, and composition or pencil-talking is the result. Proceeding from objects to names teaches definitions; words are understood and become part of the child's vocabulary. The skilful teacher will give the child a broad basis of language.

Mathematical Department.

EXAMINATION FOR GRAMMAR SCHOOL PRINCIPALS.

CHICAGO, NOV. 19, 1881.

MATHEMATICS.

1. Define quadratic equation; a pure or incomplete quadratic; an affected quadratic. Define both kinds of progression, illustrating each.

2. A gentleman has two square rooms whose sides are to each other as 2 to 3. He finds that it will require 20 square yards more of carpeting to cover the floor of the larger than of the smaller room. Required the length of a side of each room.

3. Given $x^{\frac{2}{3}}+3x^{\frac{1}{3}}=10$. Find x.

4. $110 was divided among a certain number of persons. If each person had received $1 more he would have received as many dollars as there were persons. How many persons were there?

5. The sum of the first and third of four numbers in geometrical progression is 10, and the sum of the second and fourth 30. What are the numbers?

6. Describe the process of constructing a triangle whose given sides are m, n, and o.

7. How are the surface and volume of a cylinder, of a cone, and of a sphere found? Give the reasoning employed in the last case.

8. There is a cone 12 inches high, and 8 inches in diameter. An auger, $2\frac{1}{2}$ inches in diameter, entering at the centre of the cone's base, bores a hole perpendicular to the base to the depth of 5 inches. Required, the volume of the cone remaining.

9. Define a spherical triangle, a spherical wedge, great and small circles. What measures the shortest distance from one point to another on the surface of a sphere?

10. Describe and illustrate by diagram the trigonometrical process of finding the distance of an inaccessible object from a given point.

VICTORIA UNIVERSITY MATRICULATION, SEPTEMBER, 1881.

ALGEBRA—PASS.

Examiner—J. A. McLellan, LL.D.

1. Multiply $2x-3y-4(x-2y)+5[3x-2(x-y)]$ by $4x-(y-x)-3[2y-3(x-y)]$.

Answer: $(3x+15y)(14x+2y)=6(x+5y)(7x+y)=$ &c.

2. Divide $a^3+b^3+c^3-3abc$ by $a+b+c$. From the result write down the quotient arising from the division of

$$a^3-b^3-c^3-3abc \text{ by } a-b-c.$$

Answer: $a^2+b^2+c^2-ab-bc-ca$.

Now, in this result we have simply to write $-b$ for b, and $-c$ for c, seeing that the second dividend is obtained from the first, and the second divisor from the first divisor by changing the letters thus.

Answer: $a^2+b^2+c^2+ab-bc+ca$.

3. When is a quantity said to be symmetrical in respect to a and b? With respect to a, b, c?

Simplify $(x+y+z)^3+(x+y-z)^3+(y+z-x)^3+(z+x-y)^3$.

See McLellan's Algebra, chap. II.

See May number, page 103, problems 8 and 9.

Answer: $2(x^3+y^3+z^3)+6(x^2y+x^2z+y^2x+y^2z+z^2x+z^2y)-12xyz$.

4. Show that $(x^2+6xy+4y^2)^5+(x^2+2xy+4y^2)^5$ is exactly divisible by $(x+2y)^2$.

We know that a^5+b^5 is divisible by $a+b$, hence this given expression is divisible by $(x^2+6xy+4y^2)+(x^2+2xy+4y^2)$, i.e., by $2(x^2+4xy+4y^2)$, or by $2(x+2y)^2$.

5. Resolve into factors $4x^4+y^4-8\frac{1}{4}x^2y^2$; x^4+2x^3+6x-9; $px^3-(p+q)x^2+(p+q)x-q$; a^8-16b^4.

$$A=(2x^2-y^2)^2-17\left(\frac{xy}{2}\right)^2$$

$$\therefore \text{ the factors are } 2x^2-y^2\pm\tfrac{1}{2}xy\sqrt{17}$$

$$B=(x^4-9)+2x(x^2+3)=(x^2+3)(x^2+2x-3)$$