SCHOOL REPORT.

The annual report of the Minister of Education for 1893, with statistics of 1892, is published. Just a word or two about the teachers' certificates. The report makes it known, that we have in Ontario only 261 first-class teachers, the same number in 1893 as in 1892; 3,074 second class, 27 more in '93 than in '92—(we are pleased to see that the number is not less than in the previous year); 4,259 third class, 40 less than in '92; and a fourth class nondescript, except by the term; other certificates 1,053, nearly 200 more than in '92. How is this last class of certificates made up? The kindly banner of the "Old Country Board" certificate was in days not long past used to cover this fourth grade of certificates. We have lively and affectionate regard for the "Old Country Board" and regret that so few of the veterans who held them can now be found.

We confess to have serious doubts about this fourth grade of teachers. We hope that the Minister will be able, when the estimates are under discussion, to give the country a clear explanation of the causes contributing to the abnormal growth of this nondescript grade of teachers. Whatever the explanation may be, we can say now they cannot be satisfactory to the educators of Ontario. The total number of teachers reported is 8,647, and of this number considerably more than half, viz. 5,312, hold the lowest grade of certificates. Changes are suggested in the report, which, if carried out fairly, may result in relieving the country from the grip of an ill equipped and immature force of teachers. This showing cannot be satisfactory to the Minister, to the Country nor to the educators of Ontario. It is high time to adopt such active measures as will remedy this state of matters. Other measures, not less effective than those set forth in the report, can easily be named, and should be applied with as little delay as possible. The Minister gives much interesting and valuable information about our schools in his annual report.

SENIOR LEAVING ALGEBRA.

BY PROF. N. F. DUPUIS, QUEEN'S COLLEGE, KINGSTON.

(Continued from last issue.)

7. (*a*) Give a general statement of the binominal theorem.

$$(1+x)^n = 1 + nx + \frac{n(n-1)}{1.2}x^2 + \ldots \frac{n(n-1)\ldots(n-r+1)}{r\,!}x^r \ldots$$

Prove it for positive integral exponents.

$$(1+ax)(1+bx)(1+cx)(\ldots)(1+nx) = 1 + x\textstyle\sum a + x^2 \sum ab + x^3 \sum abc + \ldots x^n abc\ldots n.$$

Now $\sum ab$ contains as many terms as there are combinations of 2 letters out of n; and, similarly, $\sum ab\ldots r$ contains as many terms as there are combinations of r letters out of n.

Making, then, $a = b = c = \ldots = n$ we have

$$(1+x)^n = 1 + nx + {}^nC_2x^2 + {}^nC_3x^3 + \ldots {}^nC_nx^n = 1 + nx + \frac{n(n-1)}{1.2}x^2 + \frac{n(n-1)(n-2)}{1.2.3}x^3 + \ldots$$

(Dupuis' Algebra, art. 186.)