we get the text of the new Act *re* the Council of Education, what the Hon. G. W. Ross proposes to do for the teachers and country; what is good for the teacher is equally good for the country.

SCHOOL WORK.

PROBLEMS AND SOLUTIONS IN GEOMETRY, AND COMMENTS THEREON.

PROF. N. F. DUPUIS, QUEEN'S.

1. Given the axiom that a straight line is, or measures the shortest distance between two points, to prove from this axiom alone, that upon the same side of the same base there cannot be two triangles having the two sides in the one respectively equal to the two sides in the other, and adjacent to the same extremities of the base.

Proof. If possible let ACB and ADB be two triangles upon the same side of the same base AB; and first let the vertex of each triangle lie without the other, so that AD and BC intersect in O.

Then $AO+OC>AC$, and $BO+OD>BD$. Adding, $AO+OD+BO+OC>AC+BD$.

But by hypothesis, $AC=AD=AO+OD$, and $BD=BC=BO+OC$.

$\therefore$ $AC+BD>AC+BD$, which is impossible. Therefore, if the triangles have their sides equal they cannot have each a vertex lying without the other.

And in a similar manner, it can be shown that one of them cannot have its vertex lying on or within the other and not coinciding with the third vertex: and the theorem is proved.

In beginning any system of elementary geometry, something has to be assumed, for it is not possible to define some of the essential elementary ideas. Thus, we might define a straight line as the path along which the shortest possible distance from point to point is to be measured, but it then becomes difficult, if not impossible, to define rigidly what is to be understood by the shortest distance. It is easy to show that if there be a shortest distance from point to point, this distance must be measured along a straight line. But I do not know that it is possible to prove *a priori* that of all the distances from one point to another, one of them is necessarily less than all the others, without falling back on some assumption with regard to space, a proceeding which appears to be a necessity in establishing the fundamentals of any system of geometry.

Assuming the foregoing axiom, however, we can start with Euc. I. 8, instead of I. 1, and go on to develope a complete system of elementary geometry.

Such considerations are useful in showing us that there may be different systems of geometry; that Euclid did not adopt the only order of sequence that is available; and that it is quite possible that the order adopted by Euclid is not the best one.

2. The sum of the three perpendiculars drawn from any point within an equilateral triangle to the sides is constant.

For if α, β, γ be the three perpendiculars drawn from the point O, within the equilateral triangle A B C and s denote the side of the triangle, $\triangle AOB=\frac{1}{2}\alpha s$, $\triangle BOC=\frac{1}{2}\alpha s$, $\triangle COA=\frac{1}{2}\beta s$, and since these three triangles make up the whole triangle, which is constant, $\therefore \frac{1}{2}(\alpha+\beta+\ \ )s=\triangle=\text{const.}$