

the secondary technical schools.

The agricultural schools usually devote from six months to a year to arithmetic, most of the problems relating to the life on the farm. About the same amount of time is given to algebra and geometry as in the other secondary schools. Advanced algebra is occasionally taught, and trigonometry is given in about one-fourth of these schools. The committee concludes that the curriculum in many of the schools is not at all affected by the special object of the school. About one-third of the agricultural schools report that the arithmetic work is more practical, while one-fourth say that the methods used have not been affected by the special function of the schools. Arithmetic is the only mathematical subject correlated with agriculture. Algebra and geometry are taught from texts after the traditional method, and few schools make any effort to emphasize or develop practical applications of these subjects. Solid geometry is taught in about twenty-five per cent of the schools. It is evident that many of these schools are following almost exactly the traditional course of study for the secondary schools, but the committee adds the hopeful statement that the curriculum for these schools is still in a formative state.

(Continued in April.)

ALGEBRAIC DERIVATION OF THE LAW OF COSINES.

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Let A , B , C and a , b , c be, respectively, the angles and the sides of the triangle $A B C$.

$$A = 180^\circ - (B + C).$$

$$\sin A = \sin (B + C) = \sin B \cos C + \cos B \sin C, \text{ or}$$

$$1 = \frac{\sin B}{\sin A} \cos C + \frac{\sin C}{\sin A} \cos B, \text{ or, by the law of sines,}$$

$$1 = \frac{b}{a} \cos C + \frac{c}{a} \cos B.$$

$$\text{Hence, } a = b \cos C + c \cos B. \quad (1)$$

Similarly, we obtain,

$$b = c \cos A + a \cos C \quad (2)$$

$$c = a \cos B + b \cos A \quad (3)$$

Multiply (1), (2), and (3) by a , b , and $(-c)$, respectively, and adding, we get,

$$c^2 = a^2 + b^2 - 2ab \cos C.$$

Similarly, we obtain,

$$b^2 = a^2 + c^2 - 2ac \cos B.$$

$$a^2 = b^2 + c^2 - 2bc \cos A.$$