

A NOTATION FOR THE GEOMETRY OF THE SPHERE.

HOWARD F. HART.

The writer in perfecting the proof of the theorem, "A spherical triangle equals a lune whose angle is half the spherical excess of the triangle," so that it would not seem so clumsy, discovered the notation given below. He further found that it not only simplified the proof of this proposition, but also that of others in the geometry of the sphere as well.

In this notation the spherical triangle of angles A, B, and C is denoted by TA, B, C; the spherical polygon of angles A_1, A_2, \dots, A_n by PA₁, A₂, ..., A_n; the lune of angle A by LA; etc.

Then we have, *e. g.*:

$$(1) \quad LA \pm LB = LA \pm B$$

$$(2) \quad \frac{1}{n} LA = LA/n$$

$$(3) \quad \frac{LA}{LB} = \frac{A}{B}$$

$$(4) \quad L_{360^\circ} = 4\pi R^2 \quad R = \text{radius of sphere}$$

$$(5) \quad TA, B, C = L \frac{A + B + C - 180^\circ}{2} \quad (\text{which is the theorem quoted above})$$

$$(6) \quad PA_1, A_2, \dots, A_n = \frac{L(A_1 + A_2 + \dots + A_n) - (n-2) \cdot 180^\circ}{2}$$

etc.

It will be observed that the notation is operative, which is probably the cause of its simplifying power and of its success as a class room device.

High School, Montclair, N. J.

NOTE ON "A DIRECT DEMONSTRATION."

WM. A. LUBY.

"A Direct Demonstration" in SCHOOL SCIENCE AND MATHEMATICS for May is incorrect. The error creeps in at the point where it is proved that AH=AG. It follows then that G and H are the same point, and that DX intersects EZ in that point. Call the intersection G and it follows that E is either on DG, above it or below it. To assume that E is on DG is to assume that the original theorem is true. Two other assumptions remain, giving the two possibilities illustrated in the figures below. In each of these figures angles IEG and IFG are not alternate interior angles. The conclusion that DX is parallel to EZ is therefore false.

Central High School, Kansas City, Mo.