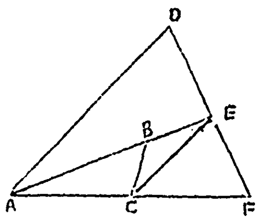
FIG 2



angles of the triangles DFA and EAF respectively be S and S_1; S is not greater than S_1. For let s be the sum of the angles of the triangle ADE; then

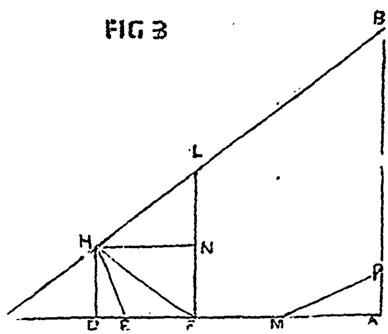
$$S = F + FAE + EAD + D,$$
$$\text{and, } S_1 = F + FAE + AEF.$$
$$\therefore S_1 - S = AEF - (EAD + D),$$
$$= AEF + AED - (AED + EAD + D),$$
$$= 2 - s;$$

a right angle being taken as the unit of measure. But, by the Proposition, s is not greater than 2. Therefore S is not greater than S_1.

Cor. 2.—From B, a point within the triangle DAF, draw BC to a point C in AF; and let S_2 be the sum of the angles of the triangle ABC. Then S_2 is not less than S. For, produce AB to E; and join EC. Then, by Cor. 1, S_2 is not less than the sum of the angles of the triangle AEC; which sum, again, is not less than S_1, or the sum of the angles of the triangle AEF; and S_1 is not less than S. Therefore S_2 is not less than S.

Proposition II.

FIG 3



If any triangle CHE (Fig. 3) have S, the sum of its angles, equal to two right angles, every triangle has the sum of its angles equal to two right angles.

For, CE being a side which is not less than any other side of the triangle CHE, let fall HD perpendicular on CE. Then HD cannot fall without the base CE; else (supposing it to fall beyond E) the angles CEH would be greater than a right angle: hence, because CE is not less than CH, the angle CHE would be greater than a right angle: so that S would be greater than two right angles: which (Prop. I.) is impossible. Produce CD to F; making DF = CD.