

PLATES OF SILVER

(Extract from *The Military Engineer*, Washington, D. C., Sept.-Oct. 1932, p. 539).

The United States Coast and Geodetic Survey has constructed a horizontal circle or plate for its 9-inch theodolite which is made entirely of sterling silver instead of the usual silver-bronze combination. This will be placed on one of the Parkhurst theodolites now being constructed in the Survey's shops and given a field test within the next few months.

The decision to have the circle made of silver was reached when trouble was experienced with two theodolite circles made in the usual manner, that is, with a plate of bronze to which is fastened a silver strip carrying the graduations. Apparently, either the forms of these two circles changed or the silver strips moved with respect to the bronze plate. In any event, large systematic errors entered into the graduations and this led to poor results in the field observations.

William BOWIE, Chief of the Division of Geodesy of the Coast and Geodetic Survey, wrote to Brigadier H. St. J. L. WINTERBOTHAM, Director of the Ordnance Survey of Great Britain, for any available information regarding the use of silver strips on theodolite plates, and received the following response dated May 21, 1932 :

"After a prolonged investigation on this matter of silver theodolite circles we have established that they were introduced by REICHENBACH in 1804, and were used in England about that time. Previous to 1804 we had always used solid brass circles, and in some cases silver-brass, and the latter became the more popular, and were used until we heard of REICHENBACH's improvements. About 1820 you may say that silver strips were in general use, and I would refer you as confirmatory evidence to WOLF's *Handbuch der Astronomie*, vol. 3, page 32."

The United States Coast and Geodetic Survey is having additional silver circles prepared for the 9-inch theodolites and, if field tests prove the silver circle superior to the older type, they will be substituted for the bronze circle on all of the Survey's first-order theodolites.

