

## A NEW SACCHARIMETER.

ONE of the many optical instruments which the English opticians have allowed the Germans to supply almost entirely is the saccharimeter. This instrument used to be made by Browning, but in late years nearly every instrument purchased in England has come from Berlin from the firm of Schmidt and Haensch, who make several designs of large and small instruments. It is therefore a pleasure to find an English firm—Messrs. Bellingham and Stanley, of London—making a saccharimeter which introduces valuable improvements on the German design. The one to which we refer is of the half-shadow type with quartz compensating wedges, but instead of the usual long wedge of which the movement is read direct by a scale and vernier, this one has a short wedge of larger angle. The wedge is moved by a screw, and the movement is read on a large drum with an open scale and sliding pointer.



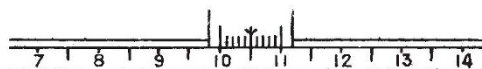
New short-wedge saccharimeter.

The whole length of the scale is some 2 ft. instead of  $1\frac{1}{2}$  or 2 in., and it can thus be read with great ease.

In instruments making use of a quartz wedge of the usual length (about 3 cm.), the scale is nearly always uneven, and unless calibrated introduces errors amounting to several tenths of a degree Ventzke. According to Landolt this is due to the quartz, which he describes as "a poor material optically"; he says that one seldom finds faultless plates, and that a pure wedge 3 cm. long is rare. Hence the value of the short wedge of Bellingham and Stanley which is less than half the usual length. The advantage of such a wedge, even if the quartz is not of special quality, is greater than would appear at first sight, since the field is due to the *average* effect of the whole of the light passed through the wedge, and this average will vary evenly through the small change of area of the wedge due to its movement, and thus the scale will be regular in spite of variations in the quartz; also it is easier to get repeated readings, owing to the greater ease with which the setting can be made with the fine adjustment given by the series, as compared with the usual rack and pinion motion. In fact, the

makers state that they have not detected any calibration errors in their instruments.

Another valuable feature is the enclosure of the scale and all working parts, so that they are protected from the salt vapours. The importance of this needs no emphasis to those who have had experience with instruments of this character. The corrosion of the



Scale of saccharimeter.

metal work—especially steel work—and of the scale, when as in the higher priced instruments this is engraved on silver or nikelin, under the action of the fumes in a laboratory often renders the instrument almost unusable in a few years. The instrument is mostly constructed of an aluminium alloy, protected by a black-stoved enamel, and no steel is used except for a small spring, which is entirely enclosed.

The optical work is of the first quality. The dividing line is sharp and clean, and the field evenly illuminated, so that adjustment for equality can be made without ambiguity, and with corresponding accuracy. The makers calibrate the scale at a number of points by direct reading against a polariser rotated on a divided circle. In the instrument examined the divisions were in half degrees "Ventzke" (of which 100 correspond to  $34.68^\circ$  of arc, for sodium light at  $17.5^\circ$  C.), and it was easy to estimate to tenths of a degree, *i.e.* to less than three minutes of arc. The design and workmanship were all that could be desired.

The same firm is also making refractometers of the Abbe and Pulfrich type and other optical instruments.

## OUR OVERSEAS MUSEUMS.

THE British Museum, the parent and model of the museums scattered throughout our Empire, stands alone in that it has no journal of its own wherein to record the work done by its staff, though from time to time special memoirs and reports are published by the Trustees. There is much to be said for the publication of a museum journal, and not the least important of its functions would be to afford the general public an index of the magnitude and scope of its work, which can now only be estimated by laborious compilation from the annual "blue-book" or the publications of the various learned societies.

A measure of the nature of the work performed by the staff of a properly organised museum can be gauged by a survey of the journals and "records" relating to the museums of our colonies and of our Indian Empire. For the most part the contents of such journals are of necessity of a highly technical