THE CAMBRIDGE SCIENTIFIC INSTRUMENT CO., LTD.,
CAMBRIDGE, ENGLAND.

Telegrams:
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The Cambridge Optical Pyrometer

For Temperatures from 700—4000° C.

This pyrometer is a practical, convenient and, at the same time, very accurate instrument which utilises the relationship between the intensity of the red rays emitted by heated bodies and their temperatures. It can be used by any person without technical knowledge, and on account of its construction accurate observations can be taken repeatedly by different operators. Temperatures from 700° C. upwards can be read from a clear scale without calculations (see Fig. 16). Because of the rapidity with which readings can be made, and the ease of sighting upon small objects, this pyrometer is frequently employed in preference to other types in steel, pottery and glass works, and for research purposes. The measurements are based upon the formula of Professors Paschen and Wien for the relationship between light, intensity and temperature, which has been tested and approved by the National Physical Laboratory, The Reichsanstalt and the Washington Bureau of Standards. The constants for each instrument are individually determined before calibration. The general arrangement of the instrument is shown in Fig. 15 and consists of—

Fig. 8 15

A—The pyrometer consisting of the optical arrangements, the electric lamp, the shield carrying the temperature scale and pointer.

B—The teak carrying-case with fittings for fixing the pyrometer and standard lamp for checking.

C—4-volt accumulator, ammeter and regulating resistance complete in teak case.

D—The standard lamp.

E—Adjustable tripod stand.

The following is a brief explanation of the construction. Behind the enlarged part in the front of the pyrometer in which is fitted the electric lamp, are two holes. Light from the object under observation passes through one, and light from the lamp through the other. These beams of light then pass through a system of lenses and prisms, are polarised in different planes and rendered monochromatic. Finally the two beams of light pass through a single ocular. The observer sees an illuminated circular field divided into two semi-circles. One semi-circle is filled by an image of the hot body under observation and the other is uniformly illuminated by the electric lamp. The two semi-circles are brought to an equal intensity of illumination by turning the eyepiece to which the scale pointer is directly attached. In this manner the unknown rays are compared with those of known intensity from the electric lamp.

Fig. 16

As the accuracy depends upon the constancy of the light from the electric lamp, a small ammeter and regulating resistance are fitted in the box containing the accumulator to ensure that whatever the voltage ofthe battery may be, the current passing through the lamp is constant. To ensure that the candle power of the lamp shall remain constant over long periods as the filament ages, provision is made for calibrating the instrument from time to time against a standard amyl-acetate lamp, and thus ascertaining the correct reading of the ammeter when the electric lamp is giving the correct illumination. This test need only be made at long intervals and the standard lamp need not be carried into the works.

The pyrometer can be supplied fitted with one or more temperature scales of any desired range from 700° C. upwards, but the following standard ranges will be found to suit most practical conditions—

Single Scale Instruments	**700—1400° C.**		**Double Scale Instruments**	**700—1400° C. and 1200—2500° C.**
,,	,,	**900—2000° C.**	,,	,,	**900—2000° C. and 1400—4000° C.***

A National Physical Laboratory Certificate of accuracy is furnished with each pyrometer.

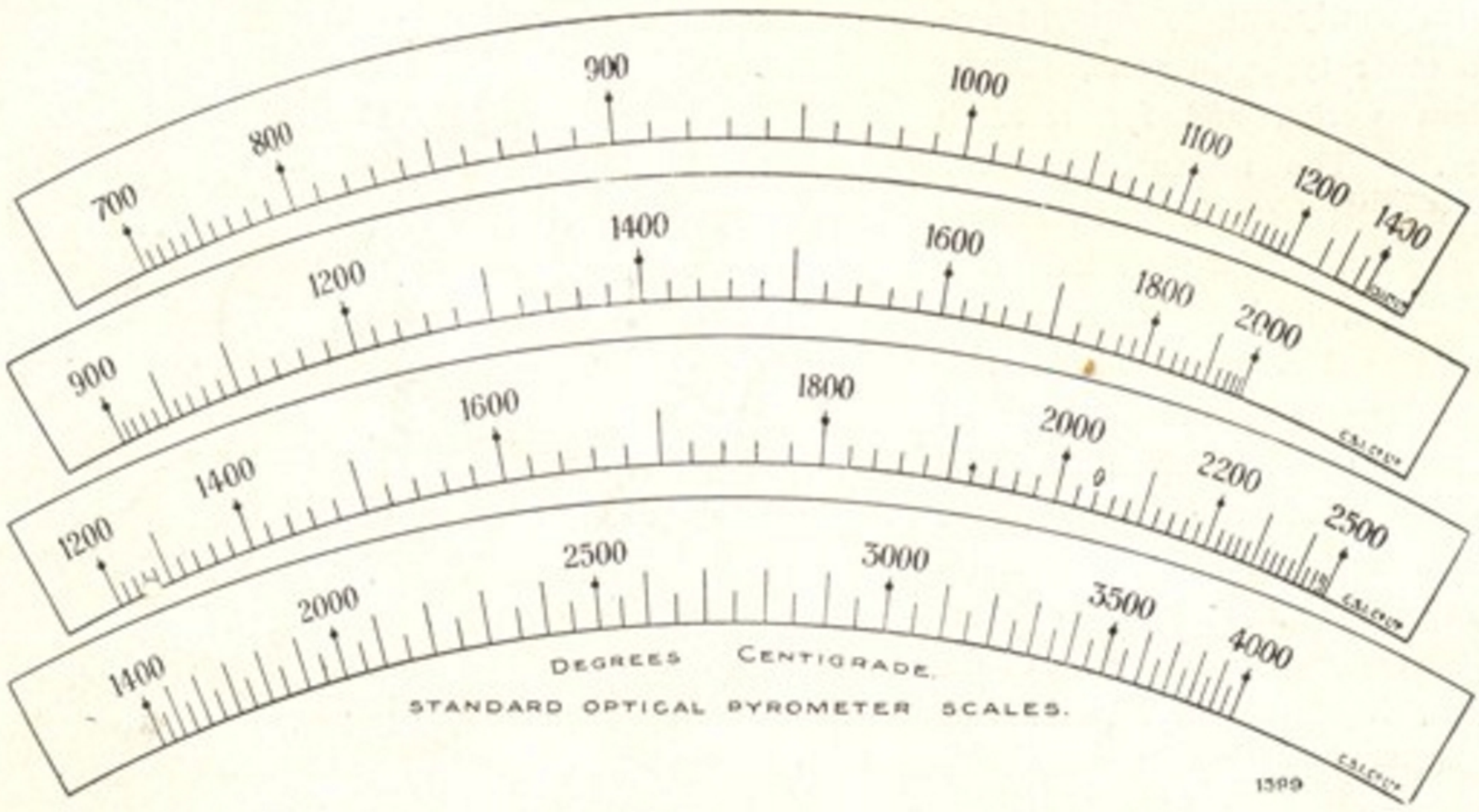

Fig. 17

We manufacture all kinds of temperature measuring, engineering, electrical, physical and physiological instruments and details will be sent on request at any time.

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* The highest known temperature is that of the electric arc, viz : 3500° C.

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