

The Eastman Universal Colorimeter.

THE Eastman Kodak Company, of Rochester, N.Y., U.S.A., has placed on the market a very useful colorimeter (Fig. 1) which has a greater range of utility than many other instruments of this kind. Originally designed by L. A. Jones (*Journal of Optical Soc. America*, 4, 420, 1920) for use in connexion with war-time problems of visibility and the measurement of the colours of sea and sky, it has been adapted, by the addition of various accessories, for the majority of laboratory and industrial requirements.

The fundamental basis of its action is the phenomenon of the so-called "subtractive colour mixture."

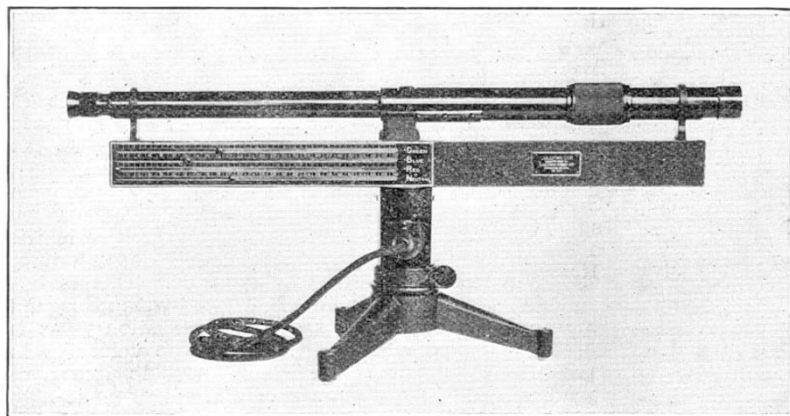


FIG. 1.—The Eastman colorimeter.

To illustrate this we may imagine three colour filters for which, in turn, the main absorption is in the red, green, and blue parts of the spectrum; thus the filters will appear blue-green, magenta, and yellow, respectively. It will easily be understood that by using these in pairs, the primary colours red, green, and blue may be produced in the transmitted light.

For the purposes of the colorimeter these subtractive primaries (blue-green, magenta, and yellow colour filters) are used in the form of long and thin wedges of dyed gelatine, suitably mounted so that various thicknesses of the absorbing medium can be introduced into the light beam by sliding the wedge parallel to its own length. By this means it is possible, for example, to 'mix' varying amounts of yellow with

blue-green in order to obtain a series of greens varying from blue green to yellow green, and so on; the use of all three wedges in considerable thicknesses will produce the darker colours. A neutral wedge and supplementary colour filters are added to increase the colour range, which includes all hues and saturations up to high values. Only some of the most highly saturated colours cannot be matched, such as, for example, a very strong emerald green.

The colorimeter is so built that light derived from a standard electric lamp and passing through the wedges illuminates one half of the field of view, while

the other half is illuminated by light from the object under test. Thus the colours of objects may be measured *in situ*, or samples may be specially mounted and illuminated for examination in the fittings which are provided; these include one designed for opaque objects, another for colour filters, and another which is designed to intensify the hue component in colours of low saturation by the use of multiple reflections from the coloured surface.

The colour scale is necessarily arbitrary, but it is claimed that an adequate permanency of the wedges has been secured, so that the instrument as it stands should be of utility for such industrial purposes as the standardisation of

paints in manufacture and the like, but it is not easy to judge how far the scales of separate instruments of this kind would agree.

In order to convert the readings of the instrument into the usual colorimetric terms of 'hue, saturation, and brightness,' a special calibration of the wedges would be necessary; the accurate transformation would always be a somewhat cumbersome process, though time could be saved by suitable tables and graphical methods.

The instrument is well made and finished, and is very simple in operation. Provided that the difficulty of dealing with highly saturated colours is borne in mind, it should meet the needs of many who have to make colorimetric measurements. L. C. M.

The World's Forestry Congress.

THE World's Forestry Congress was held at Rome on April 29-May 5. The meeting was preceded by a visit on April 27 to the Milan Exhibition, at which a certain number of delegates inspected the forestry exhibit and a section dealing with wood-utilising machinery. Fifty-eight countries were represented at the Congress, most having from two to five Government delegates and a varying number of others who represented their countries but were not specially deputed to do so. Most of the European countries had strong deputations, as also had the United States of America. The heads of the delegations representing Great Britain and the Government of India respectively were Lord Lovat and Prof. E. P. Stebbing.

At a preliminary meeting of the Technical and Scientific Committee on April 28, the honorary presidents, president, and vice-president of the Congress were elected, and afterwards the presidents and vice-presidents of the five sections into which

the Congress was divided for working purposes. The presidents of the Congress were Italians. The vice-presidents were from Germany, United States, Great Britain, Dutch East Indies, Japan, and Norway, and the presidents of sections from Sweden, Czechoslovakia, Spain, France, and Brazil.

The opening meeting of the Congress was held on April 29, H.M. the King of Italy and M. Mussolini being present. This was followed by a general meeting, and later by a meeting of heads of delegations at which the work to be carried out was finally sanctioned. Two days, May 31 and June 1, were devoted to a visit to the Forest School at Florence, and to an excursion to the forest of Vallombrosa. Three days were allowed for the work of the sections, each section having three meetings of three hours each. Sections I. and III. met at the same hours, and sections II., IV. A and IV. B. It was not therefore possible for any one delegate to attend all the meetings of each section. Since many Governments were well