Culture in Relation to Growth and Differentiation," in which numerous experiments and observations on animal tissues grown *in vitro* will be described, and their bearing on fundamental problems in connexion with growth and differentiation discussed, and "The Technique of Tissue Culture *in vitro*," which will aim at giving a full description of the setting up and sterilisation of the apparatus required, and detailed instructions for the preparation both of the medium and the method used for the implantation of the tissues. Methods for staining the cultures both *intra vitam* and after fixation will also be described.

PUBLICATION No. 555, issued by Messrs. Cooke, Troughton and Simms, Ltd., contains descriptions of a full range of surveying and other field instruments manufactured by the firm, and also certain of their other products of general interest to those connected with civil and railway engineering work. Many of the instruments described represent a combination of the best points of various patterns formerly manufactured in competition by the two firms, T. Cooke and Sons, Ltd., and Troughton and Simms, Ltd., now merged under one constitution, and illustrate the many developments that have taken place during recent years in the design and construction of surveying instruments. The present publication is more than a catalogue. It contains an interesting chapter on the history of the two firms and refers to several instruments of historic importance, *e.g.* the Troughton dividing engine (1793), now in the Science Museum, South Kensington, and the Cooke instruments used in the British Antarctic Expedition (1910–11). Other chapters deal with subjects of a more practical nature, *e.g.* optical systems, stadia lines, collimation and eccentricity errors, and the adjustment of instruments. Thus the catalogue becomes quite a useful text-book.

ERRATUM.—In NATURE of February 9, p. 212, col. 1, line 9, for "Sir Francis Darwin" read "Sir Horace Darwin."

Our Astronomical Column.

TOTAL ECLIPSE OF THE MOON.—There are two total eclipses of the moon in 1924, both partially visible in London. In that of February 20, totality ends at $4^h\ 57^m$ P.M., some 25 minutes before sunset. The moon will rise about half eclipsed, the last contact with the umbra occurring at $5^h\ 58^m$. A smokiness due to the penumbra will be quite perceptible for about 20 minutes after this. It is, of course, quite useless to attempt to observe the last contact with the penumbra, which occurs at $7^h\ 1^m$, since the diminution of light in the outer portion of the penumbra is quite imperceptible.

FREQUENCY OF TOTAL SOLAR ECLIPSES.—Rev. W. Rigge discusses the question of the frequency of total solar eclipses at a particular station in *Popular Astronomy* for January, with special reference to his own station Omaha. He fails to find a single totality there in the past four or the coming two centuries. The nearest approach of the moon's shadow was 23 miles.

He also examines the numbers for London and Rome in the interval A.D. 600–1800, using the maps recently published by J. Fr. Schroeter. He finds two totalities in London (in 878 and 1715) and three for Rome. The writer of this note, in a rough investigation made several years ago, found about 3 totalities in 1000 years for a given point on the earth's surface. The number in a country of considerable size is of course much greater. On the average there is one totality every 70 years in the British Isles; the present blank period of 203 years, from 1724 to 1927, is of very unusual length.

COMETS.—Since the detection of D'Arrest's comet Mr. H. E. Wood has re-examined some plates taken in September last, and has succeeded in finding two faint images of it in the following positions:

G.M.T.	R.A. 1923·0.	S. Decl. 1923·0.
Sept. $5^d\ 6^h\ 53^m\ 21{\cdot}3^s$	$17^h\ 34^m\ 28^s$	$15^\circ\ 33'\ 34''$
$7\ 6\ 20\ 33{\cdot}2$	$17\ 39\ 57$	$16\ 31\ 54$

These will be of great use in helping to determine the present orbit. The estimated magnitude was 14, whereas on November 10 it was 11, although the distance from sun and earth was then much greater. It is clear then that some remarkable physical change caused the comet's brightness to increase fiftyfold in the interim. This may be compared with the remarkable fluctuations of light exhibited by Holmes's Comet in 1892.

Mr. F. J. Morshead, of New Plymouth, New Zealand, independently found the Comet Bernard-Dubiago on November 6 in the field with γ Trianguli Australis (R.A. $15^h\ 11^m\ 41^s$, S. Decl. $68^\circ\ 24'$). He described it as faint. Clouds and moonlight prevented further observations until November 29; on November 30 it was in the field with ϵ^2 Arae (R.A. $16^h\ 56^m\ 59^s$, S. Decl. $53^\circ\ 7'$) and moving towards θ Scorpii. New Zealand does not receive the Copenhagen telegrams, so no intimation of the previous discovery was available.

DARK NEBULÆ.—Prof. G. E. Hale contributes an interesting article on Barnard's Dark Nebulæ to the January issue of *Scribner's Magazine*. It begins with Sir W. Herschel's astonishment on finding what he called "a hole in heaven." This is the region near Rho Ophiuchi. A photograph taken by Prof. Barnard with the Bruce telescope is reproduced, and makes Herschel's wonder easy to understand. In immediate juxtaposition to rich galactic starfields is a large black starless region of complicated form. Barnard is shown at work with this instrument, and some other dark markings are reproduced, both from Bruce plates and from those taken with the 100-inch Hooker telescope. Hale notes that both he and Barnard originally shared Herschel's view that these regions were "holes in heaven," but were gradually brought to look on them as obscuring clouds of dust; this is sometimes faintly luminous, as in the Pleiades nebulæ, which have been found to have spectra similar to those of the adjacent stars, so that they are presumably shining by reflection. The suggestion is made that the diameters of the dust-particles are of the order of a wave-length of light, so that radiation pressure, especially near stars of types B and A, becomes very effective. The clouds are supposed to have masses hundreds of times that of the sun, and to be held together by mutual gravitation. An enormous cloud is supposed to cover most of the constellation Orion; the great nebula is "chiefly a superficial fluorescence of the gaseous elements in a small region" of the cloud; perhaps excited by the radiation of the trapezium stars.