

mine absolute time can still do good work by timing the exact duration of annularity; this applies especially to observers fairly near the limit of annularity. Prof. Newcomb found numerous records of this kind, made in England during the total eclipse of 1715, which enabled him to correct Hansen's value of the centennial motion of the moon's node. Photographs taken about mid-eclipse, on as large a scale as possible, would be of value for determining the difference of the diameters and ellipticities of sun and moon.

Useful spectroscopic work can also be done, the diminution of sky-glare being of service in photographing the prominences or reversing layer. The British Astronomical Association, which has experience of a great number of eclipses, is prepared to organise work if a sufficient number of observers send in their names.

It is possible to reach observing stations by rail, either on the line to Wick and Thurso, or on that running westward from Dingwall to Loch Alsh (for Skye); the journey from London to the eclipse zone is in the neighbourhood of twenty-two hours, and the return fare (third class) in the neighbourhood of 8*l.* at present rates. The season is probably too early for the steamboat services, otherwise these would afford a ready means of reaching observing stations on the mainland or islands.

Besides astronomical work, the eclipse affords opportunities for at least three other studies: (1) Meteorological. The temperature is directly affected, and there are frequent indirect effects on barometer, wind, and cloud formation. (2) Magnetical. The work of the Carnegie Institution of Washington, under Prof. L. Bauer, has established a connection between eclipses and the elements of terrestrial magnetism. Such a connection is in no way surprising, for the diurnal variation in these elements has long been known, so it is to be expected that the interposition of the moon should act similarly to the interposition

of the earth during the night hours. (3) Wireless telegraphy. A notable improvement in the clearness of signals has been observed during eclipses, which is again analogous to what happens during the hours of darkness. Advantage might be taken of this to make time comparisons for longitude about the time of greatest eclipse. The eclipse is large enough for this purpose throughout the British Isles. The magnitude at Edinburgh is 0.95; Dublin, 0.94; Oxford and Cambridge, 0.89; and Greenwich, 0.88.

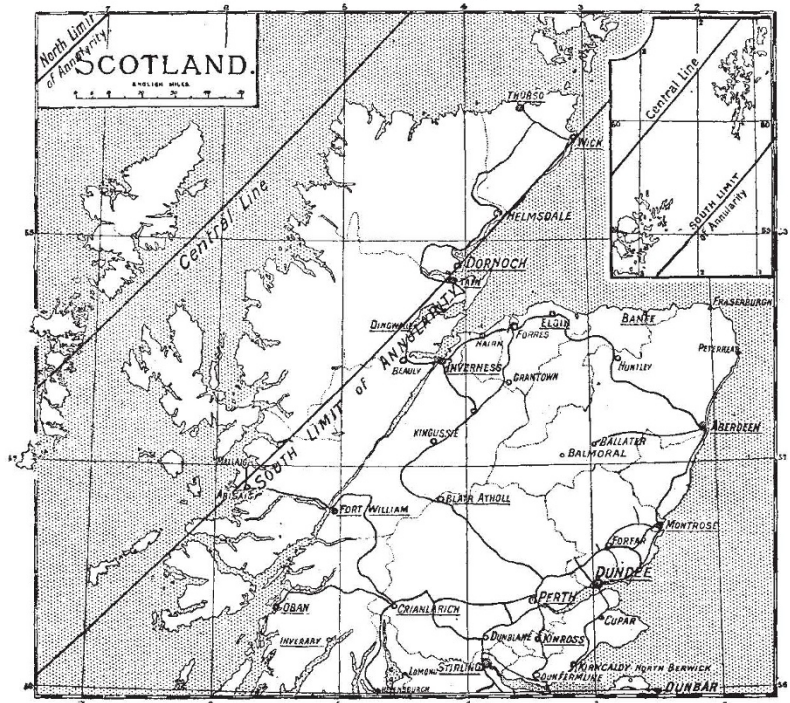


FIG. 1.—Track of the annular eclipse of April 8, 1921.

There will be a total solar eclipse in England and Wales on June 29, 1927 (civil). The central line will run from near St. David's Head to near Whitby, where the sun will have risen about  $1\frac{3}{4}$  hours, and totality will last 24 sec. At the total eclipse of January 24, 1925, the track of totality will graze the Western Hebrides, but with a very low sun. It will be necessary to go to the neighbourhood of New York for effective observations on that occasion.

### Obituary.

PROF. EMILE BOURQUELOT.

BY the death of Emile Bourquelot, Professor of galenical pharmacy in the University of Paris, science has sustained an irreparable loss. Born in a small village in the Ardennes in 1852, Bourquelot was apprenticed in a pharmacy in Sedan while the town was still occupied by the Germans. He afterwards became chief pharmacist in the Hôpital Laeonec, and then successively

assistant professor and professor of galenical pharmacy in the Ecole Supérieure de Pharmacie, now the faculty of pharmacy in the University of Paris. Bourquelot at once devoted himself to the investigation of various pharmaceutical problems, but gradually restricted himself almost entirely to the study of the enzymes occurring in drugs and various plants, their action and the changes brought about by them in the constituents of

drugs and their galenical preparations. His researches in this direction, often in conjunction with M. Hérissey, M. Bridel, and other of his assistants and pupils, gained for him a world-wide reputation. His investigation of the constituents of gentian root and of the changes brought about by enzymes during the drying of the root and the making and keeping of preparations made from it may well serve as a model for future workers. The latter years of his life were mainly devoted to the study of the synthetical as well as the analytical action of enzymes, in which field remarkable results were obtained.

To his scientific attainments Bourquelot added a personal charm that fascinated everyone brought into contact with him. His unflinching courtesy and friendly disposition endeared him to all. He was one of the most eloquent of lecturers, and those who were fortunate enough to hear his lecture on "The Synthesis of Glucosides by Ferments" at the International Congress of Pharmacy at The Hague in 1913 will long remember his admirable lucidity, clear enunciation, and exquisite delivery.

Though Bourquelot had been in indifferent health for the last two or three years the end came with dramatic rapidity, and pharmacy was robbed of one of its most brilliant exponents.

#### COL. R. A. WAUHOPE.

COL. R. A. WAUHOPE, whose death is announced, was, perhaps, better known for the splendid quality of his practical work at map-making on the Indian frontier (and beyond it) than for researches into those branches of geodetic science which form the special objective of that section of the Indian Survey Department which is centred in Dehra Dun. He was one of the first and best of those surveyors who reformed the antiquated methods of geographical reconnaissance and proved that sound square mapping may be evolved on precisely the same principles of triangulation and topography in the field of an expedition or a campaign as govern the output of Ordnance mapping in the quiet fields of home survey.

Col. Wauhope's science consisted in the clever combination of exact methods, where they were possible, with the scientific adaptation of inexact methods (that is to say, methods not ordinarily recognised as permissible under normal conditions of map-making), and obtaining therefrom results which have proved to be satisfactory. The best instance of such adaptation was afforded when he fixed the initial point of the Russo-Afghan boundary at the head of Lake Victoria, in the Pamirs, by the method of instrumental resection from distant Himalayan peaks (the position of which had been determined by a regular geodetic series of the Indian triangulation) in circumstances where direct intersection from a regular series across the Himalayas was impossible. Such a direct series was eventually carried through with much difficulty and at great expense of money and time from India to the

same point, when it was found in the first place that the result in absolute values of latitude and longitude was almost coincident with Wauhope's value, and, in the second, that it was doubtful whether the result of direct triangulation completed under abnormal conditions was the more trustworthy of the two. In this special case it must be remarked that few surveyors possess that physical capacity which enabled Col. Wauhope to attain the elevations necessary for observation.

T. H. H.

MR. GEORGE CLINCH, the librarian of the Society of Antiquaries, whose death, on February 2, we regret to record, joined the staff of the society in January, 1896, having previously been employed at the British Museum. In May, 1886, he exhibited to the society a collection of flint implements found by him during eight years in West Wickham, Kent. In December, 1888, Mr. Clinch reported to the society the results of excavations made by him during the ten previous years in the supposed pit-dwelling at Hayes Common, in the same county. Later, he published a volume entitled "Antiquarian Jottings," describing in a popular manner these and other researches in the same district. Mr. Clinch also wrote a number of the "Little Guides," and a work on old English churches. He prepared the annual Lists of Archaeological Papers after they had been discontinued by Sir Laurence Gomme. As librarian he earned the esteem of the fellows and others using the library by his courtesy and readiness to assist. He was in his sixty-first year.

THE death is announced, in his sixty-sixth year, of DR. WILLIAM THOMPSON SEDGWICK, who had been connected with the Massachusetts Institute of Technology since 1883 as successively assistant professor, associate professor, and full professor of biology. He had also been, since 1897, curator of the Lowell Institute, Boston, and since 1902 a member of the advisory board of the hygienic laboratory of the U.S. Public Health Service. Prof. Sedgwick was author of "Principles of Sanitary Science and Public Health," and joint author of "General Biology," "The Human Mechanism," and "A Short History of Science."

WE much regret to announce the death, on February 17, at ninety-one years of age, of DR. W. ODLING, F.R.S., Waynflete professor of chemistry at the University of Oxford from 1872 to 1912; also on February 21, at seventy-eight years of age, of PROF. L. C. MIALL, F.R.S., Emeritus professor of biology at the University of Leeds; and on February 22, in his eighty-fifth year, of PROF. R. B. CLIFTON, F.R.S., lately professor of experimental philosophy in the University of Oxford.

THE death is announced, on February 16, in his seventy-ninth year, of MR. C. GROVER, for many years astronomical assistant at Sir C. E. Peek's observatory at Rousdon, Devon.