

of artificial irons and steels, and his residence at Sheffield enabled him to obtain the necessary materials for a research, which not only resulted in important discoveries by himself, but laid the foundation of the science of microscopic metallography, which has made such important advances in recent years.

Our illustrations are taken from the catalogue of Messrs. James Swift and Son, who in this country have been among the foremost in meet-

ing in botany as well as in mathematics and languages. Some years later he became a lawyer's clerk, and afterwards a teacher under the old National School system, the economic value of food-plants being one of his teaching subjects. This led to his preparation of a catalogue for the Indian Department of the Exhibition of 1862, and eventually to work at the India Museum. Here he spent much time studying the lower cryptogams, especially fungi, on which he soon became a

leading authority.

In 1880 Cooke obtained an appointment in the Herbarium of the Royal Botanic Gardens, Kew, being placed in charge of the Thallophyta, a post which he continued to hold until he retired at the age of sixty-five. Whilst at Kew he completely re-arranged the mycological collections, and incorporated the large and valuable herbarium of the Rev. M. J. Berkeley, and later on his own extensive collections, which have been estimated to number 46,000 specimens. He also dealt with material coming in from abroad, from which he described and figured many new species. During this period he was assisted in his private work by Mr. George Masee, who afterwards succeeded him in his duties in the Cryptogamic Department.

Cooke stands out

as a great systematic mycologist, and as a populariser of his science. His first important work—"Handbook of British Fungi"—(1871) is a classic, which to this day demands a good price. The most celebrated is "Illustrations of British Fungi." These eight volumes, containing 1200 plates of British Agaricaceæ, are a stand-by of all British mycologists, and the fact that they are still the subject of scrutiny and criticism by eminent continental botanists only testifies to their importance in mycological literature. For twenty years Cooke edited *Grevillea*, a journal devoted to

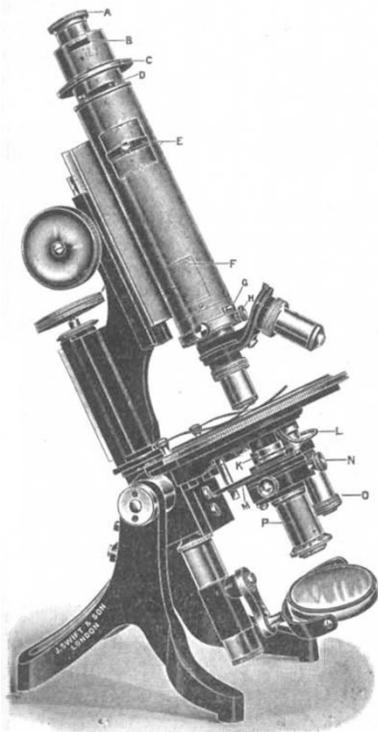


FIG. 1.—Swift's "Survey" Petrological Microscope. A, Rotating analyser working over ocular; B, slot for quartz wedge or other compensator; C, divided circle working in conjunction with analyser A; D, slot through ocular for micrometer, etc.; E, slide carrying upper Bertrand lens which can be focused and pushed out of the optic axis when not required; F, analyser in body, instantly removable from optic axis; G, slot for quartz wedge, etc., when working with analyser F; H, centring nose-piece; J, achromatic convergent system; K, iris diaphragm; L, loop for instantly removing top hemispherical lens of condenser; M, swing-out rotating cell for stops, compensators, etc.; N, centring screws to convergent system; O, focussing adjustment for convergent system; P, polariser mounted on independent swing-out arm.

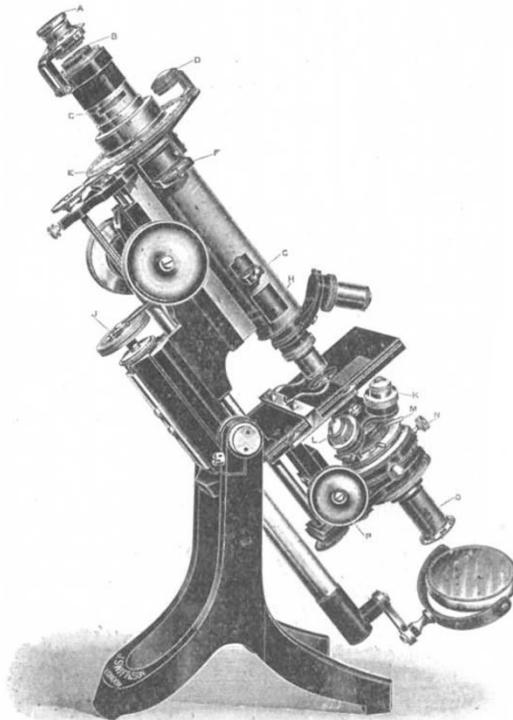


FIG. 2.—Swift's "Improved Dick" Petrological Microscope (Khartum model). A, Analyser mounted above ocular and geared to rotate simultaneously with the polariser; B, cross-webbed ocular; C, slot through ocular for wedges, micrometer, etc.; D, lens for reading circle and vernier; E, divided circle reading by vernier to $\frac{1}{5}$; F, slide bearing Bertrand lens (this lens is provided with a diaphragm of apertures and can be focussed and pushed out of the optic axis when not required); G, slide bearing lower Bertrand lens, Klein's quartz plate and a clear aperture (this lower Bertrand lens shows a much larger interference figure than the upper one, filling as it does the entire field of the ocular); H, extra analyser mounted in body (this analyser is generally used for photomicrography); J, fine adjustment by differential screw which by means of a vernier reads to 0.0002 mm.; K, aplanatic oil immersion condenser, n.a. 1.40; L, aplanatic dry condenser, n.a. 1.10; M, iris diaphragm below which is a rotating swing-out cell for stops, compensators, etc.; N, screws to centre condensers; O, polariser mounted on an independent swing-out arm; P, milled head for focussing condensers.

ing the often difficult requirements of scientific men, by carrying out their suggestions with great practical knowledge and skill. J. W. J.

DR. M. C. COOKE.

BOTANISTS will learn with regret of the death of the veteran mycologist, Dr. M. C. Cooke, at Southsea on November 12. Mordecai Cubitt Cooke was born at Horning, Norfolk, on July 12, 1825. His early education was scanty, but he received help from his uncle, who instructed him

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Cryptogamic botany. He also published a fungus flora of Australia and many papers of scientific importance, besides innumerable minor articles. His industry is further attested by the presence in the Kew collections of about 25,000 of his drawings of fungi. During later years, especially, he wrote popular books, and also turned his attention to other fields of cryptogamic botany.

After his retirement in 1892 Cooke retained his interest in fungi, and until 1904 attended the annual fungus foray of the Essex Field Club. Recently his eyesight failed, though his mind remained keen and active. He was honorary M.A. of Yale, and LL.D., and in 1903 he had the honour of being awarded the gold medal of the Linnean Society. A. D. C.

NOTES.

THE King has been pleased to approve of the following awards this year by the president and council of the Royal Society:—A Royal medal to Prof. E. W. Brown, F.R.S., for his investigations in astronomy, chiefly in lunar theory; a Royal medal to Prof. W. J. Sollas, F.R.S., for his researches in palæontology, especially in the development of new methods. The following awards have also been made by the president and council:—The Copley medal to Sir Joseph Thomson, O.M., F.R.S., for his discoveries in physical science; the Rumford medal to the Rt. Hon. the Lord Rayleigh, O.M., F.R.S., for his numerous researches in optics; the Davy medal to Prof. W. J. Pope, F.R.S., for his researches on stereochemistry and on the relations between crystalline form and chemical constitution; the Darwin medal to Prof. E. B. Poulton, F.R.S., for his researches in heredity; the Hughes medal to Prof. J. S. Townsend, F.R.S., for his researches on electric behaviour of gases.

NATIONAL regret at the death of Lord Roberts on Saturday last, as the result of a chill caught while on a visit to France to see the Indian troops, is shared by men of science. Throughout his career Lord Roberts stood for scientific organisation and individual efficiency; and to the last day of his life he was concerned with undertaking useful services for his country. In the field his success was the fruit of careful forethought, boldness, and vigour; when an administrator he laid stress on the encouragement of intelligence and initiative among soldiers of all ranks; and after his retirement from active service he devoted the remainder of his days to advocating the encouragement of rifle shooting as a national pursuit, and the establishment of a system of obligatory physical training. He saw the needs of his country and did his best to educate public opinion in favour of a remedy for them. In Lord Roberts the attributes of duty and self-sacrifice were represented at their highest, and the whole Empire mourns that he has now passed into silence.

THE council of the Physical Society of London has decided not to hold the annual exhibition of physical apparatus this year.

THE eighty-ninth Christmas course of juvenile lectures, founded at the Royal Institution in 1826 by

Michael Faraday, will be delivered this year by Prof. C. V. Boys, his title being "Science in the Home."

WE regret to learn of the death, at sixty-five years of age, of Dr. J. Borgmann, professor of physics in the University of Petrograd, and author of various works on electricity and magnetism.

WE regret to announce that Prof. August Weismann, professor of zoology in the University of Freiburg-im-Breisgau since 1867, foreign member of the Royal Society, and of world-wide distinction as a biologist, died on November 5 at eighty years of age.

AT the annual meeting of the London Mathematical Society, held on November 12, the De Morgan medal was presented to Sir Joseph Larmor in recognition of his researches in mathematics and mathematical physics.

A FAIRLY strong earthquake was felt over Jamaica on October 15 (see NATURE, vol. xciv., p. 207). A month later, on November 15, two other shocks were felt, the first at 12.50 a.m., of considerable force, and lasting seven or eight seconds; the second, a slighter shock, between 8 and 9 a.m. No serious damage was caused by either shock.

MR. W. S. ADAMS, Mount Wilson Solar Observatory, California; Prof. H. Andoyer, professor of physical astronomy in the Sorbonne, Paris; and Dr. F. Schlesinger, director of the Allegheny Observatory, and professor of astronomy, University of Pittsburgh, U.S.A., have been elected associates of the Royal Astronomical Society.

IT is announced in the *London Gazette* that the King has appointed Mr. T. H. Warren, president of Magdalen College, Oxford, to be Knight Commander of the Royal Victorian Order, and Mr. C. G. Robertson, fellow of All Souls' College, and senior tutor in modern history at Magdalen College, Oxford, to be Commander.

FOR several years Prof. W. B. Bottomley, King's College, London, has been working on the bacterial treatment of peat; and some results of the investigation have been described in papers presented to the Royal Society and the British Association. The Board of Agriculture has now made a grant of 150*l.* to the botanical department of King's College in aid of research on the subject of the probable accessory food-substances in humus and "bacterised" peat, a condition of the grant being "that reasonable facilities will be accorded to any accredited scientific worker who may desire to undertake investigations in connection with 'bacterised' peat."

AT the anniversary meeting of the Mineralogical Society, held on November 10, the following officers and members of council were elected:—*President*: Dr. A. E. H. Tutton. *Vice-Presidents*: Prof. H. L. Bowman and Dr. A. Hutchinson. *Treasurer*: Sir William P. Beale, Bart. *General Secretary*: Dr. G. T. Prior. *Foreign Secretary*: Prof. W. W. Watts. *Editor of the Journal*: Mr. L. J. Spencer. *Ordinary Members of Council*: Mr. F. H. Butler, Mr. J. P. De Castro, Mr. B. Kitto, Prof. A. Liversidge, Dr. J. J. Harris