

knighthood of the same Order last year. Sir Edward Gonner's early death was due to an attack of influenza. At a time like the present when the inculcation of sound economic principles seems to be more than ever necessary, the loss of so good and practical a teacher as Sir Edward Gonner will be deeply felt.

MR. GEORGE CUSSONS.

It is with regret that we record the death on February 10, at the age of seventy-five years, of Mr. George Cussons, the founder of the well-known firm of scientific apparatus makers of Lower Broughton, Manchester. Mr. Cussons in his early manhood gained a studentship at the Royal School of Mines, London, and upon the completion of the course became a drawing-master and also a teacher of geometry and mechanical subjects in evening classes in towns near Manchester. Having considerable mechanical skill, acquired in the course of his apprenticeship, he devised a variety of models and apparatus, which he employed effectively to demonstrate the problems arising in the course of his teaching. Finding great advantage accruing therefrom, he was induced to enter business life as a manufacturer of apparatus to be used in the demonstration of the subjects of geometry, theoretical and applied mechanics, and of physics. Among other excellent apparatus he designed and patented a much-improved Atwood's machine to demonstrate the laws of falling bodies. His firm gained well-deserved repute among Technical Institutions for the excellence and adaptability of its apparatus.

Mr. Cussons, whilst he was a student at the evening classes of the Owens College, Manchester, made the acquaintance of Osborne Reynolds, the eminent Professor of Engineering at the College, and brought to his notice certain models for

use in Descriptive Geometry. He suggested various improvements which were adopted, and the models were exhibited at the National Health Exhibition of 1884, where they gained a medal for excellence. Since that time the firm has been awarded medals for the superior character of its apparatus at exhibitions held at home and abroad, and has supplied scientific equipment to practically every country in the world. It furnished a large number of models for geometrical and mechanical drawing, together with a considerable amount of equipment, for the extensive mechanics laboratory of the Manchester College of Technology, which have proved of eminent service. Mr. Cussons was in close touch with all the principal science institutes, and was always ready to discuss any new suggestions for apparatus, and to place his practical training and his knowledge of the teaching of mechanical and physical science at the service of those concerned.

THE death occurred on January 28, in his 52nd year, of Dr. Charles Baskerville, who had been professor of chemistry at the College of the City of New York since 1904. Dr. Baskerville had previously occupied a similar post at the University of N. Carolina. He did notable work on the rare earths, and carried out many investigations in the chemistry of anæsthetics. His inventions included processes for refining oils, hydrogenation of oils, plastic compositions, reinforced lead, etc.

WE notice with much regret the announcement of the death on March 3, at fifty-five years of age, of Prof. Benjamin Moore, Whitley Professor of Chemistry in the University of Oxford.

THE *Chemiker Zeitung* reports the death on February 13 of Prof. Theodor Liebisch, of the University of Berlin, well known for his work on physical crystallography, especially in the department of crystal optics.

Current Topics and Events.

A NATIONAL tribute to the memory of Sir Ernest Shackleton took the form of a special service in St. Paul's Cathedral at noon on March 2. The service was conducted by Dean Inge and the Cathedral clergy and was short and simple but impressive and of great beauty. It included some sentences from the Burial Service, the twenty-third Psalm, the lesson from 1 Corinthians xv., the anthem "Thou wilt keep him in perfect peace," and two special hymns, "Eternal Father, strong to save" and "For all the saints who from their labours rest." The soft beauty of the perfect music was followed with striking effect by the shrill sounding of "The Last Post" by the boys of H.M.S. *Worcester*. It was impossible amid the splendour of the ceremonial and the distinguished congregation representative of the most refined civilisation not to picture in contrast the rough chapel on South Georgia and the toil-stained whalers who surrounded Sir Ernest Shackleton's grave, and the little *Quest* carrying on the mission on which he perished, tossing in the huge waves of the Southern Ocean or beset by the Antarctic ice. The congregation at St. Paul's included the widow and three children of the explorer, several of his sisters and other relatives, representatives of the King, Queen Alexandra, the Prince of Wales,

the Duke of Connaught, the Colonial Secretary, the First Lord of the Admiralty, the Trinity House, and the diplomatic representatives of Norway, Denmark, Portugal, Argentina, and other countries. The Royal Geographical Society was represented by its President, a large number of the Council, and the principal officials, and many other societies and institutions sent representatives. Amongst those with special interest in the Antarctic regions were Mr. John Q. Rowett, Sir John Scott Keltie, Dr. H. R. Mill, Dr. H. O. Forbes, and a strong muster of Sir Ernest's old comrades, including Captain C. W. R. Royds, R.N., and Mr. L. C. Bernacchi of the *Discovery* expedition, Capt. W. Colbeck of the *Morning*, Sir Philip Brocklehurst of the *Nimrod* expedition, Mr. J. M. Wordie, Mr. Greenstreet, and Mr. Rickenson of the *Endurance* expedition, and Mr. Mason, who had sailed on the *Quest*, but had to return on account of his health. No doubt others were present who were not recognized in the great congregation.

MR. CAMPBELL SWINTON gave some very interesting reminiscences at one of the meetings recently held to celebrate the Jubilee of the Institution of Electrical Engineers. In particular he recalled some of the experiments carried out in 1879 by David

Hughes, whose widow, who died recently in America, has bequeathed some of his notebooks to the British Museum. These have been examined by Mr. Swinton. They prove that Hughes undoubtedly noted some of the effects now known to be due to high-frequency waves. He used a small spark coil as a generator, and a Bell telephone and a battery generally connected in series with a microphone as a receiver. The microphone apparently acted sometimes as a coherer and possibly sometimes as a thermocouple rectifier. He received signals up to distances of about a hundred yards. He noted that the effects produced were very uncertain at the distance of half a mile. When he earthed one or both ends of his transmitting and receiving circuits he got enhanced results. It has to be remembered that all this was done about nine years before Hertz's memorable discoveries. Hughes, however, seems to have had no conception that he was dealing with electro-magnetic waves. He thought that the effects were due to electric conduction through the air. In a letter to *The Electrician* on May 5, 1899 (vol. xliii. p. 40), Hughes himself describes his experiments. It appears that he showed his experiments to a number of leading men of science in 1879 and was profoundly discouraged by their comments on them. In particular Sir George Stokes stated that the effects were due to ordinary electro-magnetic induction. It would be interesting to speculate what might have happened had they encouraged him to proceed with his researches. But in any case a great deal of further experimental work would have had to be done before the art of radio-telegraphy was achieved.

SIR ROBERT HORNE, Chancellor of the Exchequer, in the House of Commons on March 1, surveyed the proposals put forward by the Geddes Committee on National Expenditure, and indicated the general views of the Government concerning some of them. The two items which in the main make up the "cut" of £18,000,000 recommended by the Committee as regards education are the reduction of teachers' salaries and the exclusion from school of children below the age of six years. The Government has decided that neither of these proposals can be put into operation. The reductions adopted amount to £6,500,000 instead of the £18,000,000 recommended by the Geddes Committee. It is proposed that teachers should contribute five per cent. of their salaries towards their superannuation fund, and this will bring in a sum of more than £2,000,000. The Department of Mines is to become an integral part of the Board of Trade, and the Minister who at present acts as secretary of the Department is to be one of the under-secretaries of the Board. The Forestry Department is to be carried on and will not be abolished as recommended by the Geddes Committee. As to agriculture, the Government has decided that the grant made available by the Corn Production Appeal Act cannot be used to make up the reduction upon education and research recommended by the Geddes Committee, but has to be additional to the amount already devoted to these purposes.

NO. 2732, VOL. 109]

THE first Scientific Reunion of the Natural History Museum Staff Association for the current year, which took place on March 1, attracted an exceptionally large attendance. Many interesting exhibits were on view, among which may be mentioned the following: Fine group of Alaskan Bighorn Sheep, consisting of a male, female, and young, recently presented to the Museum by Mr. T. R. Hubbock; selection of the mammals, birds, and insects collected by the Mt. Everest Expedition in 1921; original plaster cast prepared by Mr. F. O. Barlow of the brain cavity of the Rhodesian Skull; model made by Mr. G. C. Robson of the curious triplicate respiratory mechanism in the Ampullariidæ; specimens and model of the gigantic frogs which swallow crabs and even small mammals whole; the flower-mimicking mantid from East Africa; Cichid fishes from Lake Victoria and certain Crustacea illustrating mutation; samples of wool treated with lichen dyes with or without mordants; specimen of *Orites excelsa* from Australia showing deposit of aluminium succinate in the cavities of the wood; a meteoric stone, weighing 4½ lbs., one of the hundred that fell on October 16, 1919, at Bur-Gheluai, Bur-Hagala District, Italian Somaliland; and a series of minerals from Zermatt. Messrs. Watson & Sons gave a demonstration of their most recent microscopes and ancillary apparatus.

THE Air Ministry announces that the Civil Aviation Advisory Board, the creation of which was announced by the Under-Secretary of State for Air at the recent Air Conference, has now been set up with the following terms of reference:—"To advise generally on the development of Civil Aviation and to report upon any specific point which may, from time to time, be referred to the Board by the Secretary of State for Air." The constitution of the Board is as follows:—The Under-Secretary of State for Air (Lord Gorell), chairman; The Controller-General of Civil Aviation, Air Ministry (Major-General Sir Frederick H. Sykes); The Director-General of Supply and Research, Air Ministry (Air Vice-Marshal Sir W. G. H. Salmond); representatives of General Post Office (Brigadier-General F. H. Williamson), Air League of the British Empire (Major-General Sir W. Sefton Brancker), Association of British Chambers of Commerce (Mr. Edward Manville), Federation of British Industries (Mr. H. James Yates), Lloyds (Lieut.-Colonel Sir Frederick Hall), Royal Aero Club (Brigadier-General Sir Capel Holden), Royal Aeronautical Society (Lieut.-Colonel Mervyn O'Gorman), Society of British Aircraft Constructors, Limited (Sir Henry White Smith). The secretary of the Board is Mr. F. G. L. Bertram, Air Ministry.

WE learn from *Science* that Dr. I. C. White—who has been State Geologist of West Virginia since 1897, and is distinguished for his contributions to the geology of coal and petroleum—and Mrs. White have given to the University of West Virginia and the city of Morgantown 1911 acres of Sewickley coal, situated in Marion County. It is estimated that

the tonnage of the acreage will be approximately 15,000,000, and should yield at least 800,000*l.* over a period of years, of which the city and the University will have equal shares. The income which the University will derive from the gift is to be devoted solely for equipping and maintaining a geological department in the State University in the city of Morgantown, West Virginia. Western Reserve University has also received a noteworthy gift from Mr. Samuel Mather, of Cleveland, who has announced that he will provide funds for the erection of the new building of the School of Medicine. The estimated cost of this is about 506,000*l.*

At a meeting of the council of the British Medical Association held on February 15, the gold medal of the association was awarded to Sir T. Clifford Allbutt, Regius Professor of Physic in the University of Cambridge, for his long and distinguished services to the profession and the association, and in commemoration of his five years' presidency of the association in the time of the great war, 1916-1921. In proposing the award, the Treasurer of the Association, Dr. G. E. Haslip, said that on all the three grounds for which the medal was customarily awarded no more fitting recipient could be found. Alike for his scientific attainments, for the measure in which he had enhanced the honour and dignity of the profession, and for his devoted services to the British Medical Association, Sir Clifford Allbutt richly merited this distinction. It was agreed that an engrossed testimonial, stating the grounds of the award, should be prepared and presented, together with the medal, at the Glasgow meeting in July next.

We have received from The City Sale and Exchange, 81 Aldersgate Street, E.C., the sole British agents, the catalogue of microscopes and photomicrographic apparatus of the Koristka Optical Co., Milan. Koristka microscopes are obtainable for all classes of work; the objectives have a reputation for being of the highest quality, and are of the apochromatic, semi-apochromatic (fluorite), and achromatic types. A binocular form and a light aluminium travelling stand are supplied. The photomicrographic apparatus includes both vertical and horizontal forms, half-watt lamps of 100-300 candle-power constituting the illuminant. Dark-ground condensers, blood-counting apparatus, microtomes, hot and mechanical stages are also listed. The microscope stands included in the catalogue can be supplied from stock, and are approximately only half recent German prices for similar models.

THE Annual Conversazione of the Institution of Electrical Engineers will be held at the Natural History Museum, South Kensington, S.W., on Thursday, June 29.

THE Guthrie Lecture of the Physical Society will be delivered on March 24 at 5 o'clock, at the Imperial College of Science, by Prof. N. Bohr, who will take as his subject "The Effect of Electric and Magnetic Fields on Spectral Lines."

NO. 2732, VOL. 109]

THE Chemical Manufacturers' Sub-Section of the London Chamber of Commerce, at a meeting held on February 28, unanimously adopted a resolution, "that this meeting is of opinion that the Safeguarding of Industries Act is of great potential value, and records its conviction that the establishment in this country of a Fine Chemical Industry is of the utmost national importance."

At the meeting of the Royal Geographical Society on March 6 the president announced that all the members of the Mount Everest Expedition have now left England, and General Bruce with his two assistants from the Gurkha Regiments of the Indian Army, Captain Geoffrey Bruce and Captain Morris, must be by this time at Darjeeling making preparations for the start of the expedition at the end of this month. They will be especially concerned with the two most important matters, firstly, the organisation of the special corps of Himalayan coolies enlisted from Nepal, and the borders of Sikkim, and Tibet, and, secondly, with transport arrangements which will require very careful and methodical planning, for the expedition is larger this year than last, and is more fully equipped.

THE following were elected at the annual general meeting of the Geological Society on February 17:—*President*: Prof. A. C. Seward; *Vice-Presidents*: Prof. E. J. Garwood, Mr. R. D. Oldham, Dr. G. T. Prior, and Dr. H. H. Thomas; *Secretaries*: Mr. W. Campbell Smith and Mr. J. A. Douglas; *Foreign Secretary*: Sir Archibald Geikie; *Treasurer*: Mr. R. S. Herries; *Other Members of Council*: Mr. F. N. Ashcroft, Dr. F. A. Bather, Prof. P. G. H. Boswell, Prof. W. S. Boulton, Mr. T. C. Cantrill, Dr. J. S. Flett, Mr. J. F. N. Green, Dr. F. H. Hatch, Prof. O. T. Jones, Mr. W. B. R. King, Prof. S. H. Reynolds, Sir Aubrey Strahan, Prof. W. W. Watts, and Mr. H. Woods.

At the annual general meeting of the Association of Economic Biologists held on February 24, the following officers and council were elected for the year 1922:—*President*: Prof. E. B. Poulton; *Vice-Presidents*: Prof. V. H. Blackman, Dr. G. A. K. Marshall; *Treasurer*: Dr. A. D. Imms; *Editors*: Dr. Wm. B. Brierley (Botany), Mr. D. Ward Cutler (Zoology); *Secretaries*: Dr. Wm. B. Brierley (General and Botanical), Dr. J. Waterston (Zoology); *Council*: Prof. V. H. Blackman, Dr. G. A. K. Marshall, Dr. S. A. Neave, Dr. W. Lawrence Balls, Mr. F. T. Brooks, Dr. E. J. Butler, Dr. E. J. Russell, Prof. J. Percival, Dr. W. F. Bewley, Mr. A. W. Bacot, Dr. J. W. Munro, Mr. A. B. Bruce.

On Thursday, March 16, Dr. P. Chalmers Mitchell will begin a course of two lectures at the Royal Institution on "The Cinema as a Zoological Method." The Friday evening discourse on March 17 will be delivered by Prof. A. P. Laurie on "The Pigments and Mediums of Old Masters," and on March 24 by Prof. F. G. Donnan on "Auxiliary International Languages."