married wife keep their heads above water. As a means of livelihood he worked for six hours every day on the subject catalogue at the Bodleian Library, and only after this work was over was he free to study Chemistry for his Oxford degree course. In spite of this double call on his time, he found opportunity to carry out research, and in 1886 he began his work on the capillary electrometer with the late Sir John (then Dr.) Burdon Sanderson, the Professor of Physiology. From 1887 onwards they did a good deal of electro-physiological work together, the mechanical details of the apparatus used being gradually improved by Burch until the final present day form was evolved.

Burch also worked out a method for analysing the electrometer curves, and in December, 1887, wished to publish an account of his discoveries. Burdon Sanderson, who was always cautious about committing himself, dissuaded him from doing so: hence a description of the method was not actually published until 1890, when Einthoven independently described his method, and so deprived Burch of some of the credit of the discovery. In 1892 Burch published a more elaborate paper on the time relations of the excursions of the capillary electrometer in the Philosophical Transactions of the Royal Society, and other papers were published later in the Proceedings of the society.

Meanwhile, Burch in 1891 took up lecturing under the Oxford University Extension Delegacy, and in 1892 he became lecturer, afterwards professor, of Physics at University College, Reading. He still lived in Oxford, and went backwards and forwards to his work daily. This was a great strain on his health, so that in 1909 he broke down and had to resign his position, though he continued to teach in Oxford.

In the last eighteen years of his life Burch devoted most of his spare time to research in colour vision. Among his observations regarding the physiology of vision were a number bearing on the vexed problem of colour sensations. He was a convinced adherent of the Young theory of colour sense. He subjected himself to a series of severe experiments in which the eye was fatigued to certain colours by prolonged intense stimulation by appropriate parts of the prismatic spectrum, and the alteration in the colour of other parts of the spectrum when observed by the fatigued eye was examined. He supplied an interesting memorandum on this subject to the Board of Trade Committee on Sight Tests three years ago. A small book presenting a practical course of instruction in visual physiology embodied the class-work he conducted in the subject at the Physiological Laboratory at Oxford. It is not only extremely lucid, as was everything he wrote, but is strikingly original in scope and treatment, and contains a number of exercises, as, for instance, one on the measurement of visual acuity, devised entirely by the author. His combination of first-hand knowledge of physical and physiological experimentation fitted him to a degree which is quite exceptional for success in this branch of scientific study.

Dr. Burch was elected a Fellow of the Royal Society in 1900. H. M. V.

PROF. G. M. MINCHIN, F.R.S.

THE death of Prof. George M. Minchin, F.R.S., on March 16, at sixty-eight years of age, has deprived science of an earnest and versatile investigator, and a wide circle of friends of a companion who will be greatly missed. Always active in body and alert in mind, Prof. Minchin caught the fire of life with both hands, and conveyed its benefits to all around him.

Prof. Minchin was appointed to the chair of mathematics in the Royal Indian Engineering College, Coopers Hill, in 1875, when he was in his twenty-ninth year; and he remained at the College until it closed, when he removed to Oxford, where he died. He took a leading part in the movement for the improvement of geometrical teaching in schools; and his little book "Geometry for Beginners" published in 1898, was an early and very favourable specimen of the methods of the reforming party. He was also the author of works on "Statics," "Uniplanar Kinematics," and "Hydrostatics"; and his treatment of all these subjects was original and distinctive. Less well known in scientific circles, perhaps, except among his friends, is a little volume of verse and prose entitled "Naturæ Veritas" published in 1887. His skill in writing verse was of no mean quality; and a humorous example of it will be found in NATURE of April 14, 1898, in a poem entitled "Balnibarbian Glumtrap Rhyme." He was a lover of good English; and this regard for the purity of the language made his many contributions to our columns clear in expression as well as authoritative in opinion.

Probably the work by which Prof. Minchin will best be remembered is that on photo-electricity and selenium cells. He began his experiments on these subjects in 1877, and was led by them to the discovery of many interesting phenomena. He observed that electric currents are produced by the action of light on silver plates coated with collodion or gelatin emulsions of bromide, chloride, iodide or other silver salts, or with eosin, fluorescein, or other aniline dyes, when the plates were immersed in a suitable liquid and one plate was illuminated while the other was screened. In 1891 he exhibited these cells to the Physical Society, and also cells made by spreading melted selenium on metal plates and immersing them in liquids together with an uncoated plate. He found that some cells, termed by him "impulsion cells," had their sensitiveness altered by slight impulses or taps, and also by electro-magnetic impulses, such as are given by electric sparks or a Hertz oscillator at a distance; so that the cells embodied the principle of the coherer used for the reception of Hertzian waves.

The form of photo-electric cell afterwards

adopted by Prof. Minchin consisted of two selenium-coated aluminium wires dipping into certain solutions. His "Seleno-aluminium Bridges," described in a paper to the Royal Society in May, 1908, consisted of two plates of aluminium separated by a very thin flake of mica and having a thin layer of sensitive (or conducting) selenium spread across one edge of the mica and the two adjacent portions of the aluminium plates. This further development of his photo-electric work was carried out in the electrical laboratory at Oxford.

Prof. Minchin's application of selenium cells to the measurement of starlight was a notable extension of his experiments. In 1894, in conjunction with Mr. W. E. Wilson, he used his cells to obtain measurable electro-motive forces from the light of planets and stars; and he was thus able to determine the relative intensities of the light of Jupiter, Venus and Sirius. Shortly afterwards, an improvement in the construction of the cells enabled measurements to be made of the E.M.F.'s of the light of Vega, Arcturus, Regulus, Procyon and other stars. A comparison of the results obtained by photo-electric measures with those of photometric measures of stellar magnitude showed close conformity.

Prof. Minchin was an M.A. of Dublin and a member of Queen's College, Oxford. He was elected a fellow of the Royal Society in 1895, and his many friends within the society and without join with the widow and his two children in sympathetic sorrow that the finger of death has touched one who was so rich in the physical and intellectual attributes of life. R. A. G.

NOTES.

WE announce with deep regret the death on March 30, in his sixty-second year, of Prof. J. H. Poynting, F.R.S., professor of physics in the University of Birmingham.

PRINCE ARTHUR OF CONNAUGHT has been elected a fellow of the Royal Society, under the statute which provides for the election of Princes of the Blood Royal.

WE record with regret the announcement of the death on March 30, in his sixty-fifth year, of the Hon. Rollo Russell, author of a number of works on meteorology and other scientific subjects.

THE death is announced, at eighty-one years of age, of Mr. G. Sharman, for more than forty years palæontologist to H.M. Geological Survey at the Geological Museum, Jermyn Street, London.

A HANDSOME brass tablet to the memory of Captain Scott and the southern party of the British Antarctic Expedition was unveiled at St. George's Chapel Royal, Naval Barracks, Chatham, on March 29, by Admiral Sir Richard Poore, Commander-in-Chief at the Nore, and dedicated by Archdeacon H. S. Wood, Chaplain of the Fleet.

DR. C. H. BROWNING has been appointed first director of the new Institute of Pathology of the Middlesex Hospital, which has been erected as the gift of Sir J. Bland-Sutton at a cost of between 15,000*l.* and 20,000*l.* Dr. Browning is at present director of the clinical research laboratories in connection with the University of Glasgow.

A STRONG committee, with the Speaker as president, has been formed in Cumberland, according to the *Times* of March 27, with the object of affording protection to the local fauna. Wherever possible tracts of natural ground will be set apart as reserves, one such tract, Kingmoor, near Carlisle, having been already secured. A "watchers' fund," to provide keepers for such reserves, is being formed, and a close watch is to be kept on nesting ravens, peregrines, and buzzards throughout the county.

IN the *Times* of March 27 attention is directed to the lateness of the arrival in this country of spring migratory birds. This lateness is specially notable in regard to a great spring flight of immigrants from Central Europe, which, as recorded by a Norfolk correspondent in the same journal a few days previously, reached Yarmouth on March 11. In normal seasons such flights are usually over by the beginning of the month. A partial explanation may be found in the great drop in temperature which occurred on the Continent between March 10 and March 11, when there was a fall of 13° in the minimum.

THE President of the Local Government Board has authorised the following special researches to be paid for out of the annual grant in aid of scientific investigations concerning the causes and processes of disease:—(1) An investigation by Dr. Eardley Holland into the causes of still-births; (2) a continuation of the Board's inquiry into the cellular contents of milk, by Prof. Sims Woodhead; (3) a continuation of the Board's inquiry into the causes of premature arterial degeneration, by Dr. F. W. Andrewes; (4) an investigation by Dr. M. H. Gordon and Dr. A. E. Gow into the etiology of epidemic diarrhœa in children. Announcement of further investigations will be made at a later date.

A WISH has been expressed in many quarters that the distinguished services which Prof. Charles Lapworth, F.R.S., has rendered to geology should be commemorated in some permanent manner. The council of the Vesey Club, Sutton Coalfield, of which Prof. Lapworth has been a vice-president for more than twenty-five years, proposes to make a donation from the funds of the club towards such a memorial, and to enable members of the club who desire to be identified personally with the project to participate also, a small committee has been appointed to collect subscriptions. The amount subscribed by members will be handed over in one sum with a list of names only of subscribers. Donations may be sent to Mr. H. H. Sherwood, 109 Colmore Row, Birmingham.

IN honour of the memory of the late Henri Poincaré, and in order that his name may be associated with a fund for the encouragement of research in science, the president of the Institute of France, on behalf of the institute, is inaugurating an international