

SYLVESTER MEDAL, AWARDED TO  
 PROF. E. T. WHITTAKER.

Prof. E. T. Whittaker is one of the best known of British mathematicians, his work showing extraordinary versatility. He has written five books, on entirely different subjects, and numerous papers which touch on almost every branch of mathematics. All his books show, besides their more technical qualities, powers of arrangement and exposition of a most unusual order; and the "Modern Analysis" and "Analytical Dynamics" have had a considerable influence on mathematical thought. Prof. Whittaker has made important additions to the theory of the solution of differential equations, ordinary and partial, by definite integrals; to the theory of Lamé and Mathieu functions, the functions of the elliptic and parabolic cylinders, and the integral equations associated with them; to the theory of interpolation; and to the theory of the solution of dynamical problems by trigonometrical series. He has also in recent years

made a number of interesting contributions to the pure mathematics of relativity, electromagnetism, and quantum theory.

HUGHES MEDAL, AWARDED TO PROF. W. L. BRAGG.

Prof. Bragg's recognition of the fact that the Laue diffraction spectra could be considered as produced by reflection from the planes of the crystal lattice, besides being a great simplification of a difficult geometrical problem, was the starting-point of two important and fruitful lines of physical investigation, namely, the measurement of X-ray wave-lengths and the elucidation of crystal structure. Work on the first of these led to Moseley's discoveries and their subsequent developments. Bragg's concentration on the second has resulted in a wonderful extension of our knowledge of the structure of crystals, both simple and complex, and of inter-atomic distances and linkages. His work may truly be said to have laid the foundations of a chemistry of the solid state.

### The Wellcome Research Institution.

ON Wednesday, Nov. 25, Lord Moynihan of Leeds, president of the Royal College of Surgeons, laid the corner stone of the new buildings for the Wellcome Research Institution, which are to occupy a site at the corner of Euston Road and Gordon Street, immediately north of University College.

The architect is Mr. Septimus Warwick, F.R.I.B.A., who has designed the building to meet the requirements of the different research laboratories and museums. The building materials are practically all of British origin.

Lord Moynihan, in the course of his remarks, outlined the development of the various research laboratories and museums founded by Dr. Wellcome, who, in the year 1894, founded his laboratories for physiological research, which were followed two years later by laboratories for chemical research.

On the recapture of the Sudan by Kitchener, Dr. Wellcome was one of the first civilians to visit that country, and he there saw, and for some time watched, conditions as they then were; and he found great opportunities for public service. It was in the year 1899 that he founded the Tropical Research Laboratories in Khartoum, the first director of which was Sir Andrew Balfour, who served there for twelve years. Attached to that research institute was a floating laboratory, which cruised through all the waterways of the Nile within reach, giving the opportunity there for continued research, and for carrying the benefits of research to the people who live far south.

Dr. Wellcome's activities continued also in Great Britain. In the year 1913 he established the Bureau for Scientific Research, and the Historical Medical Museum. In 1914 he established the Museum of Medical Science, including Tropical Medicine and Hygiene, and in 1920 he founded the Entomological Field Laboratory. All these institutions, or many of them, suffered, however, under one great disadvantage, which all research students will appreciate at once: they were separate from one another, giving no opportunity for that hour to hour, or minute to minute, consultation which is one of the great advantages of having collective research under one roof; but from to-day we see the possibility of that being altered. Under the roof of the Wellcome Research Institution the following subjects are to be studied: medical zoology, parasitology, entomology, tropical medicine and hygiene; there will be physiological

and chemical research laboratories, the historical medical museum, and a museum of modern medicine. It will be agreed that this is a formidable and very impressive list. Dr. Wellcome's activities, however, have not been confined to Great Britain. He also gave great help towards the foundation of the Gorgas Memorial Laboratory, near the Panama Canal.

One of the conspicuous features of Dr. Wellcome's life-work has been at once its relevance and its opportunism. In all his investigations of tropical diseases he begins in an almost virgin country, and the harvest gathered has been such that not only have many lives been spared and much suffering saved, but also vast tracts of country have, for the first time, been made fit for human habitation.

At home, as all of us will agree, the great need of medicine to-day lies in the direction of increasing the opportunities for medical research, and not less in the opportunities for creating those competent to undertake medical research. Physical observation alone, from the time of Hippocrates through our great students, Sydenham, Addison, and James Mackenzie, has revealed many secrets which have been so long hidden in connexion with diseases that lay within the orbit of pure investigation, and the conquests of mere observation have been innumerable and of a value beyond all reckoning. Upon it a virile and beneficent art has found its opportunities extended and its thought affected by the encouragement and adoption of methods which are seeking to change a practical art into an applied science. Difficulties, of course, have been found all along the way, but experiment in medicine is for ever inevitable.

As a result of experiment in medicine we are, happily, gradually replacing anatomy by physiology, and if disease is, in many respects, merely altered function, then we are about to create a science, new to the human race, of comparative function in health and in disease. But experiment has done even more for us than that. It has strengthened the arm of medicine, and it has made the tests more severe for the acceptance of evidence which has been derived by the methods of observation.

Medicine depends, of course, not only for its present stability but also for its future advance, upon a large number of ancillary sciences. Those sciences are to be studied in the new building. The effect, therefore, on medicine will be considerable, but it is hoped something better even than that will come out of the work



done in this institution, and similar institutions; that is, to create in the minds of the leaders of the profession what Sir Walter Morley Fletcher would call "The Religion of Research". Lord Moynihan said he hoped that the date would not be far distant when those who are to serve upon the teaching staffs of hospitals throughout Great Britain will be permeated by "The Religion of Research", and in time to come all members of the teaching staffs will themselves have undergone, in institutions similar to this, a discipline of research.

In concluding, Lord Moynihan said that by his constant thought Dr. Wellcome has done as much as any man has ever done in Great Britain to make it possible to advance both the science and the art of medicine.

By placing the Museum of Medical Science, including tropical medicine and hygiene, and the Historical Medical Museum under one roof, there is no doubt that in London there will be a combination which will be unequalled in the world.

The associated Physiological Research Laboratories will remain at Langley Court, Beckenham, and the Field Entomological Laboratory at Claremont, Esher.

### Plant Breeding in Germany.

THE acceptance by Dr. Baur of the invitation of the Royal Horticultural Society to give the Masters Lectures in 1931 has resulted in the publication, in the *Journal of the Horticultural Society*, vol. 56, Part II, of two lectures which contain, in the first place, a most effective short statement of the present position of evolution, and in the second, a very interesting summary of the work in plant breeding that is being carried out, under Dr. Baur's direction, in the Kaiser Wilhelm Institut für Züchtungsforschung at Müncheberg.

Dr. Baur concludes that the experimental study of genetics has shown clearly that "inheritance of acquired characters in the sense of Lamarck does not exist". He argues that the main cause of what Darwin called hereditary variation is the combination of characters provided for by biparental inheritance, but differs from Lohs because he considers that such variations are too limited to supply the needs of progressive evolution. Continued breeding of *Antirrhinum* has led him to the conclusion that the frequency of mutation is no less than 1.3-7 per cent, though such mutations are mainly recessive and therefore only distinguished on extensive and continued breeding trials. Most of these mutations are small, and a striking mutation is usually associated with loss of vitality. Dr. Baur concludes that through the selection of small mutations the differentiation of species out of parent species can be explained, and that wider differences may gradually arise because two such new forms, as they become separated by an increasing number of such 'small-point mutations', tend also to become infertile to one another.

Dr. Baur's account of the work of the Kaiser Wilhelm Institute is full of interest. The extensive breeding work, coupled with patient testing, which permits the isolation of a lupin free from poisonous alkaloids, after a million and a half plants have been examined, is a striking example of selection work. The recombination of Mendelian characters is carried out on normal lines, but on an extensive scale, with wheats, grapes, etc.; whilst new experiments are proceeding with attempts to induce variations artificially by chemical methods, as has been done so successfully in recent years by X-rays.

### University and Educational Intelligence.

CAMBRIDGE.—The Vice-Chancellor has received a letter from the Trustees of the British Museum offering the sum of £2000 for the use of the Scott Polar Research Institute. This sum represents the greater part of the balance remaining of the sum which was subscribed to meet the cost of publishing the scientific results of Capt. Scott's *Terra Nova* expedition.

LONDON.—The title of professor has been conferred on the following: Mr. F. W. Twort (bacteriology), in respect of the post held by him at the Brown Animal Sanatory Institution; Dr. H. A. Harris (clinical anatomy), in respect of the posts held by him at University College and University College Hospital Medical School; Dr. F. A. P. Aveling (psychology), in respect of the post held by him at King's College.

The title of reader in eugenics has been conferred on Miss E. M. Elderton, in respect of the post held by her at University College.

OXFORD.—On Nov. 17, Congregation passed a decree recording the grateful thanks of the University to Prof. J. Mark Baldwin, for a gift of £1000 for the capital endowment of the Edward Bagnall Poulton Fund, established for the encouragement of research in the subject of evolution. This fund has already been of much service in assisting work of the kind indicated.

At the same meeting of Congregation the thanks of the University were accorded to the Royal Astronomical Society for a generous gift to the Lewis Evans Collection of a set of more than fifty astronomical and mathematical instruments.

SHEFFIELD.—Prof. J. H. Andrew, professor of metallurgy at the Royal Technical College, Glasgow, has been appointed to the chair of metallurgy in the University in succession to Prof. C. H. Desch, who has been appointed superintendent of the Department of Metallurgy at the National Physical Laboratory.

ON Nov. 29 the Cinema Hall, which is maintained by the Empire Marketing Board at the Imperial Institute, South Kensington, reopened with a series of cinematograph displays, many of which are travel films of geographical interest. In future an admission charge of one penny is being made for each session. Monthly programmes of the films and lectures may be obtained on the payment of two shillings, being subscription for one year.

THE following scholarships will be offered by the Institution of Naval Architects for competition in 1932: Naval architecture, Martell scholarship (£130 a year for 3 years); Denny scholarship (£75 a year for 4 years): Marine engineering, Parsons scholarship (£150 a year for 3 years); Denny scholarship (£75 a year for 4 years). The Denny scholarships are open to boys less than nineteen years of age from public or secondary schools who have not yet begun their apprenticeship, and are tenable at the University of Glasgow. The remaining scholarships are open to apprentices less than twenty-three years of age, and are tenable at the Royal Naval College, Greenwich, the University of Glasgow, Armstrong College (University of Durham), the University of Liverpool, and the City and Guilds (Engineering) College, London. Particulars may be obtained from the Secretary of the Institution of Naval Architects, 2 Adam Street, Adelphi, London, W.C.2.