changing their position in the swamps, regulated the alternation of sands, shales and peat.

The studies in sedimentary petrology of the younger Tertiary formations proved that only by this method can a trustworthy correlation of these continental formations be reached. In the Quaternary also it proved once more its value; the alternating influences of Rhine and Meuse in the northern Limburg was clearly demonstrated; older correlations of these sands and gravel beds had to be corrected; and a much better insight into the Quaternary movements along the large faults of the whole district has been gained.

Although the Germans were aware of the presence of this large body of scientific workers and tried several times to transport them to Germany, we somehow succeeded by various methods in retaining the whole group intact until the liberation of southern Limburg by the Allied Armies. Several of them then joined the Army, and since then the organisation has been liquidated except for the Geophysical Survey, which suffered a severe loss because the Germans destroyed all the maps and sections already prepared. Fortunately, the fundamental data were preserved and we are well on our way to the final report.

By the joint effort of industry and science in a critical period, many young Dutchmen were saved from deportation, and by these efforts a large volume of scientific work has been accomplished.

OBITUARIES

Prof. T. H. Morgan, For. Mem. R.S.

PROF. THOMAS HUNT MORGAN, who died on December 14 at the age of seventy-seven years, played a leading part in establishing the science of genetics in an impregnable position. To few is given the opportunity to open such wide fields of research. Still fewer individuals have the capacity to seize the opportunity.

Morgan started as a zoologist on strictly morphological lines, but quickly saw the value of the experimental method for problems of development such as polarization of the frog's egg, and regeneration. Here he followed Roux and Driesch, and in his two early books "Evolution and Adaptation" and "Experimental Zoology", he foresaw the great advantages of experimentation in zoology. In later years "Experimental Embryology" (1929) returned to the same theme, making use of the greatly increased knowledge acquired as the result of experiments.

Morgan possessed two outstanding characteristics: his ability to choose the right men to help him and his ability to change his views as the facts required. Prior to 1900, he was distrustful of the theory of natural selection, and on the publication of De Vries' "Mutations Theory" turned to it to account for the origin of species. Not content with theorizing, he took up the breeding of *Drosophila*, which had been shown by Lutz, Payne and others to be amenable to culture in the laboratory. He was expecting to find a repetition of the phenomena shown by *Oenothera*, but soon discovered that *Drosophila* did not give rise to new species. Instead it provided valuable material for the study of segregation.

From 1909 onwards, Morgan attracted and encouraged a brilliant group of workers, many of whom were trained under Wilson and followed their individual lines of attack on the problems of

inheritance in *Drosophila*. As a result of the combined efforts of Morgan's team, *Drosophila* became the organism best known genetically, and the facts of linkage and crossing-over and their relationship to chromosomes became firmly established. As the results accumulated, Morgan was driven to accept the theory of natural selection which he had rejected earlier; thereby he demonstrated the ability to alter his views to accord with the evidence.

T. H. Morgan received many honours, among which may be mentioned the award of a Nobel Prize for Medicine and Physiology in 1933; and the foreign membership of the Royal Society.

In Great Britain, Morgan's name has always been respected, although, led by our own protagonist Bateson, we have not always seen eye to eye with him. Now, however, his great work has convinced the most sceptical among us. No longer is *Drosophila* considered a pariah among living organisms; rather do we endeavour to interpret the behaviour in other organisms by the aid of the pioneer work of the Morgan school.

F. W. SANSOME

Prof. William Peddie

PROF. WILLIAM PEDDIE, who died at his home in Dundee on June 2, was born in Papa Westray, one of the most northerly islands in Orkney, in 1861. He was a son of the manse, his father being a minister of the Free Church of Scotland. He was educated at Kirkwall Grammar School, learning to be a sailor as well as a mathematician—a friend speaks of being compelled to admiration by his superb handling of their craft in a nasty bit of sea. In 1880 he entered the University of Edinburgh, where he studied natural philosophy under P. G. Tait and mathematics under George Chrystal. In 1883 he was appointed University assistant in natural philosophy and formed a close association with Tait, in whose physical laboratory he worked. In an article on Tait and his work written many years later, Peddie records the intense admiration felt for the great master by all his students: "From the record of his life and work, men who never knew him may come under the magic spell and be enrolled in the list of his disciples". Tait had early expressed the hope that the large subject of natural philosophy would before long be represented by two chairs. The first step was taken in 1892, when C. G. Knott was appointed lecturer in applied mathematics and W. Peddie lecturer in natural philosophy.

The Harris chair of physics in University College, Dundee, was instituted in 1895, and when J. P. Kuenen, its first occupant, returned to the Netherlands, William Peddie was appointed as his successor in 1907, holding also the title of professor in the University of St. Andrews. On his retirement in 1942 he received the honorary degree of LL.D. from the University of St. Andrews and the title of emeritus professor. Peddie was an active fellow of the Royal Society of Edinburgh and a D.Sc. of the University of Edinburgh (1888).

Peddie's interests in science and philosophy were wide; his scientific work was concerned mainly with thermodynamics and the equipartition of energy, torsion and torsional oscillations of a viscous wire, and in later years with colour in its various aspects and Weber's theory of magnetism. In addition to elementary text-books and contributions to Cham-

bers's "Encyclopædia", he wrote a treatise on "Colour Vision" (1922), and also a work on "Molecular Magnetism" (1929). He married in 1891 Jessie Isabella Dott, to whom these two works were dedicated: during her long illness he was her devoted attendant.

To me personally, since our first meeting in 1923, Peddie was always extremely kind, and my most pleasant memory of him sees him seated in the secluded garden of his home at "The Weisha", where the birds were so tame that they fed from his fingers.

H. S. ALLEN

NEWS and VIEWS

Chester Beatty Research Institute: Retirement of Prof. E. L. Kennaway, F.R.S.

At the end of the present academic year, Prof. E. L. Kennaway will retire from the directorship of the Chester Beatty Research Institute of the Royal Cancer Hospital and from the chair of experimental pathology in the University of London which he has held since 1931. Prof. Kennaway and his colleagues have studied the problem of carcinogenesis for more than twenty years and have made outstanding contributions to the problem of cancer. The pioneer work of W. V. Mayneord and I. Hieger at the Royal Cancer Hospital upon the fluorescence spectrum of coal tar led to the discovery of the first known organic carcinogenic compound, 1:2:5:6-dibenzanthracene, and to the isolation from tar of the more rapidly acting compound 3:4-benzpyrene, which was identified afterwards by J. W. Cook and C. L. Hewett. The team of workers at the Royal Cancer Hospital, being the first to produce cancer in animals with pure substances of known chemical structure, continued to take the lead in this field of research, and now about three hundred carcinogenic substances are known. The careful and extensive researches have revealed correlations between chemical structure and carcinogenic action. The knowledge obtained has been used and followed up by research workers in all parts of the world. In collaboration with Mrs. Kennaway, Prof. Kennaway has also investigated the distribution of cancer in men of different races, social classes and occupations. His work has been recognized by the award of the Baly Medal of the Royal College of Physicians (1937), the Walker Prize of the Royal College of Surgeons, the Anna Fuller Memorial Prize (with the other workers named above, in 1939), and a Royal Medal of the Royal Society (1941). Although he is relinquishing the directorship of the Institute for which he has done so much, students of the cancer problem hope that he will not entirely abandon the problems of cancer.

Dr. Alexander Haddow

DR. A. HADDOW, who has been appointed to succeed Prof. Kennaway as professor and director, has been working at the Royal Cancer Hospital since 1937. Dr. Haddow was a student and later lecturer in bacteriology in the University of Edinburgh, where he worked on problems connected with the phenomena of dissociation and variation of bacteria and on the pathology of growth. Since 1935, when he first described the growth-retarding effect of the carcinogenic substances, which had been prepared at the Royal Cancer Hospital, Dr. Haddow has carried out a great deal of work on the inhibition of both normal and malignant growth. He has also published work on the effects of synthetic oestrogens on cancer in man, the action of urethane in leukaemia, the

carcinogenic activity of derivatives of aminostilbene and on the curious effect of certain *iso*-alloxazines in inducing colour change in the hair of animals. Dr. Haddow's long connexion with the work of the Chester Beatty Research Institute of the Royal Cancer Hospital and his energy and enthusiasm should help to maintain the outstanding position which the Institute has in the field of cancer research. He is a member of the Grand Council of the British Empire Cancer Campaign.

British Beekeepers' Association: Research Committee

THE British Beekeepers' Association, recently re-organised, has now established a series of committees to pursue further the numerous interests of its members. Among these is a research committee the primary function of which is to foster co-operation in research, and to co-ordinate research activities. It seeks also the establishment of a clearing house for information and for the results of contemporary research. The object of bee-keeping is commonly regarded as the production of honey, but the national interest is even better served by the pollinating activities of the foragers, a service which has been reliably valued in Great Britain alone at £4,000,000 a year. At the same time, the craft affords a fascinating hobby for amateurs whose activities, being spread throughout the country, are of greater national importance, for the reason indicated, than are those of the commercial honey producers. The amateur finds not merely a hobby which may be turned to profit, but also an interest in many branches of science. Nevertheless, methods of management are subject to many errors due to tradition and pseudo-science. To deal with such matters, co-operation is essential, because there are so many variables that the individual can seldom conduct an experiment on an adequate scale and is too frequently deceived by an element of chance. Most that is known in the craft has been the result of the enthusiasm of independent observers. The British Beekeepers' Association's Research Committee realizes the importance of amateurs, and is anxious to get into contact with them whether members of the Association or not. The Committee is also hoping to get into touch with those concerned in researches in other fields which are of interest to beekeepers. Communications should be sent to the chairman of the Research Committee, Mr. E. B. Wedmore, Totease House, Buxted, Sussex.

Post-War Astronomy

DR. R. O. REDMAN has put forward a number of interesting predictions about the future of astronomy (*Observatory*, 66, 328; October 1945). It is suggested that astronomy will have a hard struggle to survive except in so far as it is required for time service, for