logical aspect. Thus with Dale he described the pharmacological action of histamine, demonstrating the physiological nature of histamine shock and the extension of the results to surgical shock. The work was revolutionary in demonstrating the part played by the capillaries in circulatory phenomena.

At a later stage Laidlaw turned his attention more particularly to the study of micro-organisms and related problems. He was the first to use spongy platinum and hydrogen in the anærobic cultivation of bacteria. With Dobell he discovered a method for growing *Entamœba histolytica in vitro* and also solved the problem as to how emetine acts in curing amœbic dysentery. With Dunkin he undertook an investigation into the cause, prevention and cure of distemper, one of the most successful investigations in medical science.

In a recent extension of this work, in co-operation with Wilson Smith and Andrewes, Laidlaw has shown that a virus can be transmitted to the ferret from cases of human infection diagnosed as influenza, and has thus discovered a technique for its further study.

DAVY MEDAL, awarded to DR. W. H. MILLS

Dr. William Hobson Mills is distinguished for his outstanding contributions to stereochemistry and to our knowledge of the cyanine dyes. He has made important observations in many branches of descriptive chemistry and has extended, especially, the theory of stereochemistry and strengthened its foundations by the devising and the performance of carefully planned experiments. In the most elegant manner he has demonstrated the occurrence of molecular dissymmetry in some of the most interesting cases predicted by theory, but, prior to his work, unconfirmed in the laboratory.

By his resolution of the oxime of ketohexahydrobenzoic acid, Mills not only justified in a new way a prediction of van't Hoff but also furnished convincing evidence of the validity of the Hantzsch-Werner theory of the configuration of the oximes. Later he explained the existence of stereoisomerism in certain diphenyl derivatives by an 'obstruction' hypothesis and he brilliantly justified his views by predicting and demonstrating a similar phenomenon in the naphthalene series.

Mills has also developed the theory and practice of spirocyclic compounds of several very different kinds, and he has added a number of elements to the list of those which, acting as a central polyvalent atom, are known to give rise to enantiomorphism.

HUGHES MEDAL, awarded to PROF. E. V. APPLETON

The Heaviside layer, or reflector of electromagnetic waves in the upper atmosphere, was originally postulated to explain the bending of such waves round the earth's curvature. Appleton, in collaboration with M. A. F. Barnett, J. A. Ratcliff and others, has brought it within the range of detailed experimental examination. Working over a moderate distance of the order of 100 kilometres, he was able to examine the interference between the direct ray, and the ray reflected from the layer, by noting the successive intensity maxima as the wave-length of the sending station is varied continuously over a small range. In this way the height of the main reflecting layer is established to be about 100 kilometres, though at night it is found to be somewhat greater. Evidence was also found of a higher reflecting layer, situated at 180 kilometres, which has come to be known as the Appleton layer. In some of the experiments the horizontal distance was only 18 kilometres, so that the reflected ray came nearly straight down.

Appleton has shown that ionisation penetrates downwards, and the height of the reflecting layer becomes less as the sun rises. During the night the number of free electrons diminishes, and the reverse process can be traced.

In a further important series of experiments Appleton and his collaborators have shown that the downcoming electric waves from the Heaviside layer are elliptically polarised in a left-handed sense. This he connected with the modification in the motion of the ions (electrons) by the earth's magnetic field, and predicted a right-hand polarisation in the southern hemisphere, a prediction since confirmed.

The Divine King in Africa

THE death of the Divine King, which may well be regarded as the central picture of Sir James Frazer's shield of Achilles, has been considered by Prof. Moret alone among the Frazer lecturers, and he had concerned himself especially with the Egyptian evidence. Prof. C. G. Seligman made it his object to repair this omission in his Frazer lecture entitled "Egypt and Negro Africa : a Study in Divine Kingship", delivered in the University of Liverpool on November 30. He reviewed the evidence which he and his colleagues have collected in Africa, with the view of shedding new light on the subject, confining himself to the position of the Divine King in living cultures.

In the Sudan in the winter of 1909–10, Prof. Seligman and his wife were able not only to obtain evidence concerning the existence and killing of the Divine King among two great Nilotic tribes—the Skilluk and Dinka—but also in the case of the former, they were given an account of the installation of the new king, part of the ceremony providing the actual mechanism whereby the divine spirit immanent in the Skilluk king was passed on to his successor. Further evidence has been obtained from the Dinka and Skilluk, and also from the Nuer, by Prof. Evans-Pritchard, and our knowledge has been much increased by the work of Mr. C. K. Meek in West Africa.

On the basis of this material, it is possible on one hand to set forth an account of at least a portion of the recently acquired knowledge concerning Divine Kings in Africa, and then to estimate whether the existence of those rulers is to be regarded as due to the survival in different parts of Africa of the beliefs of a very old immigrant Caucasian stock, the Hamites, of whom the proto-Egyptians were themselves a branch, or whether the belief is to be considered as specifically Egyptian in origin and as having spread from Egypt by culture contact.

The evidence is derived from (1) the Nile Valley south of Khartum, here including the tribes from the neighbourhood of the great lakes ; (2) Nigeria and the adjoining parts of West Africa ; and (3) parts of East and South Africa inhabited by Bantu tribes.

The two great geographical areas of the Nile Valley and West Africa, inhabited, one by an eastern Nilotic and predominantly Negro-Hamitic population, the other by a great mass of predominantly forest Negroes, show a most striking community in ideas and customs. There can scarcely be any doubt that a number of the traits common to Ancient Egypt and the western area arose in Egypt and were passed on to the negroid tribes of the Nile Valley and the Negroes of the Congo. The evidence whether they were further transmitted from the Congo to Nigeria is much less clear, although it can scarcely be doubted that Egyptian influence sometimes did reach West Africa.

Summarising the facts, however, there are certain main conclusions to which they lead. At a remote period of more than 5,000 years ago, in that part of the Nile Valley now called Upper Egypt, the king or tribal leader among the pre-dynastic Egyptians was particularly associated with vegetation, the cultivation of the crops and the welfare of the land. This king, there is reason to believe, was slain ceremonially when he had reigned for a certain number of years or when he had grown old. Whether this be so or not, at any rate during historical times, a group of ceremonies known as the *sed* festival was performed, which had for their purpose the confirmation of the king in his kingship (re-investiture) and probably rejuvenation. These too can be traced back to pre-dynastic times.

There is abundant evidence for the direct extension of Egyptian ideas, beliefs, art-forms and technical devices southwards for some distance up the Nile Valley. To the south, among the Negroid tribes of the Nile basin, we find at the present day kings who are especially associated with the welfare of the crops, herds and people and these kings may either be killed ceremonially on showing signs of ill-health or senescence (Skilluk), or after a number of years at their own request (Dinka). Sometimes such kings, though concerned with the welfare of the crops, are not killed (Nuer, Latuka); sometimes a 'confirmation' or 'rejuvenation' ceremony is performed for their benefit (Baganda). Among a neighbouring tribe, the Bakitara, the most prominent feature of the *sed* festival, the shooting of arrows towards the cardinal points, constitutes a rite at the installation of the king, which is repeated annually at the beginning of the year.

In spite of these amazing resemblances, chronological factors forbid us to believe that the Divine Kings of the Sudan are directly due to Egyptian influence. Rather must they be regarded as examples of an old and widespread Hamitic belief, though there has become attached to them through Egyptian influence a number of specifically Egyptian rites such as the *sed* ceremony.

Turning to West Africa, we find Divine Kings in their typical form in a group of tribes (Jukun, etc.) with sun-worship and a ceremony corresponding to the *sed*. Here the quality of the Divine Kings conforms more closely to the Egyptian agricultural pattern than it does in the Nile Valley, where the concern of the tribesmen for their cattle may have diminished their interest in agriculture. But here again it must be recognised that we are dealing not with the transmission of a specifically Egyptian custom, but with an older Hamitic belief, which did, however, reach West Africa from the east, that is, from the neighbourhood of the Great Lakes, via the Congo.

Speculating on the deeper significance of the beliefs and ceremonies, more weight, Prof. Seligman held, should be given to the complicated installation ceremonial ritual of the Divine King than had been done in the past, for it is in the installation and rejuvenation ceremonies that there is especially the emotional projection upon the Divine King of his peoples' deepest desire for life, fertility and prosperity.

University and Educational Intelligence

CAMBRIDGE.—Prof. H. A. Harris has been elected professor of anatomy as from October 1, 1934, in succession to Prof. J. T. Wilson, who will retire on that date. Prof. Harris is at present professor of clinical anatomy at University College, London.

Prof. W. Heisenberg, of the University of Leipzig, has been appointed Scott lecturer for the year 1934 and Prof. G. von Hevesy, of the University of Freiburg i. Br., for the year 1935.

A. E. Platt has been elected to the Gwynaeth Pretty studentship.

The George Henry Lewes studentship in physiology has been awarded to Dr. John Burnaston Bateman.

LONDON.—The celebration of the one hundred and tenth anniversary of the foundation of Birkbeck College will be held on Wednesday, December 13. The foundation oration will be delivered by Col. John Buchan at 8.15 on "The Margins of Life". Admission is free.

OXFORD.—In convocation on November 28, the honorary degree of D.Sc. was conferred on Prof. Arthur Thompson, who is about to resign the chair of human anatomy, which he has held for nearly fifty years. The Public Orator in presenting him referred to his eminent services to the Medical School in Oxford, to his professorship of anatomy at the Royal Academy, to his achievements as an anthropologist, and to his skill as an artist.

Congregation has also approved the preamble of a statute providing for the addition of 'entomology' to the style of the Hope professorship of zoology.

THE annual conference of the Geographical Association will be held at the London School of Economics on January 3–6. The presidential address will be delivered on January 3 by Prof. P. M. Roxby, Rankin professor of geography in the University of Liverpool, on "China as an Entity—the Comparison with Europe". Lectures will be delivered by Prof. J. D. Greene, Dr. J. H. Hutton, Prof. G. C. Allen, Prof. J. Coatman, Commander L. C. Bernacchi, Dr. S. W. Wooldridge, Mr. D. L. Linton, and Prof. Julian Huxley. Two discussions have also been arranged: for teachers in primary schools, on "The Place and Problems of Local Geography", to be opened by Mr. J. C. E. Rogers; for secondary schools, on "Suggestions for a First School Certificate Geography Syllabus", to be opened by Mr. J. A. Mortlock. Further information concerning the conference can be obtained from the Clerk, Geographical Association, c/o Municipal High School of Commerce, Princess Street, Manchester, 1.

THE twenty-second Conference of Educational Associations will be held at University College, Gower Street, London, W.C.1, on January 1–8, under the presidency of Dr. George Dyson. On January 1,