

FUTURE OF WEST AFRICAN UNIVERSITIES

UNIVERSITIES in those parts of tropical Africa which began under British influence have entered a new phase in their development. Political changes have created the demand for increased facilities for higher education and have forced on the universities the need to re-define their purpose in relation to the societies within which they function. Three major commissions have recently considered these problems in East Africa, in Ghana and in Nigeria (*Nature*, 184, 243, 1959; 189, 95, 1961; and 192, 14, 1961). The Commission on Higher Education in Nigeria, of which Sir Eric Ashby was the chairman, made a number of detailed proposals concerning expansion and adaptation of university education in that country. In a recent paper*, *Patterns of Universities in Non-European Societies*, Sir Eric Ashby's thesis is that West African universities must take on themselves a distinct West African identity, developed by a gradual process of growth from their British foundations. At the same time their academic standards must be maintained at the high level they are to-day.

By examining the impact of higher education on India and on West Africa, Sir Eric is able to suggest what changes should be encouraged and what dangers must be avoided in the evolution of West African universities.

In both these regions, universities were not at first sponsored by the indigenous people, but by the Colonial power to impose a new Western culture. The Indian universities were modelled on the University of London as it was in 1850. They were simply to be examining bodies, drawing their candidates from colleges already established. With a few notable exceptions they have remained little more than examining bodies, without the warmth and fellowship of academic society. Moreover, because of the exclusion from examinations of any subject connected with religion, the universities were cut off from the mainstream of Indian ethical and religious life. Here lie the main causes behind the failure of Indian universities to adapt themselves and become the centre and focus of India's intellectual life.

The West African universities have been more fortunate. The University Colleges at Ibadan and Accra were established as a result of the findings of the

* *Patterns of Universities in Non-European Societies*. By Sir Eric Ashby. Pp. 27. (London: School of Oriental and African Studies, University of London, 1961.)

Asquith Commission on Higher Education in the Colonies, in 1945. They are universities in the fullest sense—vigorous, cohesive societies of teachers and scholars. To establish high academic standards the curricula and examinations have been tied to the University of London. Though no subjects have been explicitly excluded, little encouragement has been given so far to undergraduate studies in African history, sociology and art. Although, superficially, these subjects have received greater attention in the universities of French West Africa, Sir Eric considers that their expression in the idea of *négritude* is little more than an outburst of cultural racialism, a by-product of the French educational policy of turning Africans into Frenchmen. British educational policy in West Africa has been less precise and doctrinaire than the French. Within the more liberal framework there is every hope that the encouragement of African studies will help to integrate the universities into African society.

The Asquith Commission did not foresee that the independence of the British West African territories would bring the desire for massive development of the economy and social services; that these, as well as the purely administrative services, would need large numbers of graduates. Less specialization, a greater breadth of knowledge and a modification of the content of courses in agriculture, engineering and medicine to meet the different needs of the countries; these are all desirable. There may also be a case for some modification of the pattern of university government. Research is expensive, and to reduce the burden of cost, research carried out in the universities and in Government institutions should be unified. However, this must not entail a loss of freedom for the university.

The West African universities have reached a stage in their development when change must be made if they are not to become unassimilated and separated from the people. However, adaptation of social institutions is difficult, and to force the pace would be dangerous. Great care must be taken to ensure that the present concern with local culture does not distort the fundamental values of learning which make a university. This is why the adaptation of the universities, which are essentially European institutions, to non-European societies needs intensive and thoughtful analysis.

C. T. MORTIMER

GEOCHRONOLOGY AND LAND SURFACES IN RELATION TO SOILS IN AUSTRALASIA

DURING the Second Australian Conference on Soil Science held in Melbourne in August 1957 it was stressed that the collection of systematic information about the various geomorphic features of the continent would contribute greatly to the understanding of the origin and development of Australian soils and thereby facilitate their mapping and help to explain their fertility characteristics. Arising from this a resolution was passed pointing to the pressing need for a great increase in knowledge of post-Cretaceous chronology in Australia. The

resolution was referred by the Australian Academy of Science to the Australian Royal Societies with the result that a symposium on geochronology and land surfaces in relation to soils in Australasia was convened by the Academy at the Laboratories of the Division of Soils, Commonwealth Scientific and Industrial Research Organization, in Adelaide during December 5-8. The meeting, which was opened by Prof. J. A. Prescott, chairman of the organizing committee, was attended by forty-four university, museum, industrial and Government scientists inter-

ested in pedology, geology, geomorphology, climatology, palaeobotany and archaeology.

Prof. F. E. Zeuner of the University of London, Prof. J. Tricart of the University of Strasbourg, and Dr. R. P. Suggate and Mr. J. D. Raeside of New Zealand were present by invitation at the symposium.

In the first session, under the chairmanship of Mr. J. K. Taylor, chief of the Division of Soils, a statement of the problem as it affected soils, geomorphology and stratigraphy was made by Dr. C. G. Stephens, Prof. E. S. Hills and Dr. M. F. Glaessner. Dr. Stephens illustrated how stable and unstable landscapes determined the activity or otherwise of factors operative in the pedological cycle; Prof. Hills emphasized the possible complexities involved in landscape development and the various potential forms of climatic change; and Dr. Glaessner dealt with the relationships of rock stratigraphy, biostratigraphy, geochronology and geotectonics to the interpretation of geological history.

In subsequent sessions the symposium took the form of papers and discussions on different topics. The first of these, dealing with chronological data, included papers by Mr. E. D. Gill on the problems of radiocarbon dating and interpretation, by Dr. R. P. Suggate of New Zealand emphasizing the uncertainty among geologists, particularly in that country, about the length of the Quaternary, by Dr. D. Walker indicating the promising nature of the Australian environment for resolving some of the more difficult palynological problems and by Mr. N. B. Tindale on the chronology of the advent and advance of man and his various implement cultures in and across Australia.

The first of two sessions dealing with Quaternary chronology in relation to soils was introduced by Mr. B. E. Butler, who reported that failure to conform with radiocarbon datings meant that the *K* (Kronos) cycle designations of periodic soil formation recently developed and applied to soils on stratigraphically different bodies of material in south-eastern Australia are not bound to correlate chronologically on a continental scale. In the following papers Mr. R. W. Jessup attributed certain microrelief features of western New South Wales to recent geomorphic and climatic changes in that area, and Mr. S. Pols and Dr. T. Langford-Smith presented new stratigraphical and geomorphic evidence about the evolution of the Riverine Plain and its prior stream systems in south-eastern Australia. An apparently large discrepancy in radiocarbon dates for deposits from these streams was noted. Another discussion about climatic conditions during sedimentation in the Riverine Plain led to a demonstration by Dr. Langford-Smith that the many prior streams, taken together as a deltaic formation, could have carried more water than the present Murray-Murrumbidgee River system.

Mr. G. Blackburn then presented new evidence for extending the recognition of stranded coastal dunes of south-eastern South Australia for more than 100 miles farther eastward into Victoria where, however, the soils, parent materials and other features of the dunes are different, but alignment and curvature is in accord with those to the west. Mr. R. C. Sprigg discussed the significance of sub-fossil desert sands and loessial lime in the dating of Australian fossil soils and climatic cycles, especially the high wind directions of the Quaternary. Mr. J. E. Coaldrake linked the features of the siliceous coastal sand dunes of southern Queensland with three high sea-levels and indicated that the sub-tropical coast could have escaped major effects of aridity during

the Quaternary. Mr. W. T. Ward described the geomorphic features and soils of a coastal section of the Mount Lofty fault block system south of Adelaide and linked bevelled surfaces and æolian mantles with the Mediterranean sequence of high and low sea-levels. Mr. G. Tweedale reviewed the Cainozoic deposits of Queensland, dividing them simply into Upper and Lower with respect to a period of lateritization.

The second of the two sessions concerned with Quaternary chronology in relation to soils was introduced by Mr. J. D. Raeside, who described the nature, origin and age of the loess of the South Island of New Zealand. Dr. Jane Soons then reviewed the evidence of former periglacial conditions in New Zealand, emphasizing features of waning periglaciation. The river terraces, æolian deposits and solifluction deposits in the Tamar River catchment area in northern Tasmania were described by Mr. K. D. Nicolls. Mr. A. B. Costin surveyed the periglacial features of the Monaro Region of southern New South Wales and indicated their significance in soil formation, and Dr. R. W. Calloway reviewed possible palaeoclimatic interpretations of colluvial deposits on the adjacent Southern Tablelands region. Dr. W. R. Browne concluded with a brief outline of Cainozoic chronology for New South Wales.

The next session, on denudation and chronology, was introduced by Dr. C. R. Twidale with a paper on aspects of landscape development in relation to pedogenesis. Dr. Twidale indicated that decisive evidence may come from the soil profile. Dr. M. J. Mulcahy followed with a description of soil distribution in south-west Western Australia in relation to various landscape units extending more than 100 miles inland and linked with the thalweg elements of the stream courses. A number of papers dealing with northern and central Australia were then submitted, one by Mr. J. Hays dealing with the laterite and land surfaces in the northern part, another by Mr. R. L. Wright with surfaces in the Daly River Basin south of Darwin and a third by Mr. W. Litchfield with soil surfaces, largely in alluvia, adjacent to the Macdonnell Ranges. Mr. J. A. Mabbutt described the summit surfaces, terraces and drainage gaps of these ranges, and Mr. T. Quinlan summarized their Mesozoic and Cainozoic geological history. Mr. B. P. Webb discussed the siliceous duricrust of arid South Australia and concluded that it is probably lower Miocene in age. Mr. C. D. Ollier described the landscape and soils associated with this duricrust at Coober Pedy. Finally, Mr. H. A. Haantjens described the nature and age of some stable land surfaces and their soils in New Guinea.

The last session for the presentation of papers dealt with soils, vegetation and time factors, and was introduced by Mr. J. T. Hutton, who described the changes in mineralogy and chemistry of soils with age. Dr. Nancy Burbidge followed with an account of the changes in plant cover and soil development in the southern Eremean Zone during Cainozoic times. A European contribution by Dr. J. B. Dalrymple on the alteration of loess in East Kent and its application to Quaternary chronology was received with great interest, especially in his techniques. The first soil survey in England by Hall and Russell early this century included this area. Mr. E. D. Gill dealt with soil formation and destruction and the evolution of Australian fauna and flora. Mr. G. D. Hubble described the varying complex relationships between soils and a number of land surfaces in south-east Queensland. Finally, Dr. K. Norrish presented the

results of a detailed study of the weathering status and mineralogy of podzolic soils in the Barossa Valley in South Australia.

On the first evening of the meeting Prof. Zeuner delivered an address on "Soils and Shore Lines as Aids to Chronology" and emphasized the significance of changing sea-levels. He illustrated his address by examples from numerous localities, including especially the Jebel Druz in northern Arabia, where the qa depressions and their shore-line features have proved a profitable source of chronological data, and from the Arabs Gulf on the coast of Egypt, where a series of stranded bar beaches and lagoons strikingly similar to those in the south-east of South Australia has likewise yielded data on former high sea-levels. On the second evening Prof. Tricart spoke on the use of geomorphological maps in the field of pedology. He illustrated his paper by reference to studies of land-forms in the headwaters of the Niger River, and in the lower situated inland delta of the same river near Timbuktu, where irrigation works were planned, also from the Senegal delta, where two old dune systems have in recent times been subject to partial marine inundation.

The last formal session on December 7 was devoted to recommendations arising from the symposium. Four resolutions were passed: (1) suggesting a standing committee on quaternary research to arrange symposia and advise on the use of any funds available; (2) emphasizing the need for greater organized effort in the compilation of topographic maps; (3) suggesting that active field workers be encouraged to attend international conferences concerned with Quaternary chronology; (4) proposing that a register of Australian radiocarbon and other datings be kept. These resolutions have been forwarded to the Aus-

tralian Academy of Science and were reported in detail to the Third Australian Conference in Soil Science held in Canberra in February.

The last day of the symposium, December 8, was devoted to a field excursion led by Mr. W. T. Ward to the coastal area immediately south of Adelaide. Here the tilted fault blocks of the Mount Lofty Ranges meet the coast at St. Vincent Gulf and for some distance inland at various elevations show a number of bevelled surfaces of marine origin. One surface, 520 ft. above sea-level, preserves a cobble beach which has been the site of the manufacture of aboriginal stone implements. The oldest of the surfaces has a variable cover of fine-to-medium textured aeolian material presumably derived by wind erosion of the exposed floor of St. Vincent Gulf in times of glacial low sea-level. The different base-levels of erosion created by changes in sea-level have controlled deposition in streams graded to those levels, and the deposited materials exhibit a sequence of soils whose morphology is related primarily to age. With increasing age there is greater textural differentiation, increasing development of gilgai, and greater degradation of the soil profiles.

During the symposium a collection of photographs, colour slides, soil profiles and specimens from a number of pedological and geomorphological studies by the Division of Soils was arranged and exhibited by Mr. H. C. T. Stace.

The proceedings of the symposium will not be published, but a mimeographed record of the papers, lectures, discussions and resolutions will be prepared by the Australian Academy of Science. It is anticipated that the substance of many of the papers will be published eventually in the usual journals.

C. G. STEPHENS

FIRST BIOMAGNETIC SYMPOSIUM

DURING November 24-25, the first Biomagnetic Symposium was held in the College of Pharmacy, University of Illinois. The symposium, organized by Madeleine F. Barnothy, included three sessions of contributed papers and the visit to three magneto-biological laboratories in the Chicago area. Sixty-five persons from all over the United States attended the meeting. The aim of the symposium was to bring together persons interested in this new field of research, to try to clarify the mechanism through which magnetic fields produce biological effects and to report about new experimental findings.

After the welcoming address of George L. Webster, dean of the College of Pharmacy, the first session was devoted to the fundamental phenomena which may occur under the influence of magnetic fields in biological systems. Jenő M. Barnothy (Biomagnetic Research Foundation, Evanston) discussed the physical effects caused by homogeneous and inhomogeneous magnetic fields on para- and dia-magnetic molecules and on systems in which thermal or electric currents and/or gradients exist. He stressed the importance of the recognition that magnetic field and gradient are vector quantities, whereby a motion of the biological specimen during exposure time with respect to these vectors could tend to annul cumulative effects. He discussed the rejection and complete healing he observed on *T* 2146 and *H* 2712 implanted tumours in mice and the arrest of the growth of the spontaneous mammary gland

carcinoma of the *C3H* strain. He attributes tumour healing mainly to the general retardation of mitosis in magnetic fields, although in case of transplanted tumours an enhancement of the homograft reaction of the host cannot be excluded. He demonstrated sections of the spleens of magnetically treated mice which showed in 90 per cent of the investigated cases a proliferation of the white pulp and replacement of the spleen substance with immature looking lymphoblasts. Two papers by M. Valentinuzzi (National Institute of Microbiology, Argentina) and L. N. Mulay (University of Cincinnati) dealt with the chemical effects caused by magnetic fields in biological systems. Valentinuzzi stressed the change in reaction-rate and change in concentration due to the motion of para- and dia-magnetic particles along magnetic gradient. Mulay discussed ferro- and anti-ferromagnetic interactions and the importance of polymeric co-ordination compounds.

The first afternoon session opened with the paper of L. J. Audus and J. Wish (Bedford College, London), which discussed experiments on magneto-tropism of plants. They found a growth-curvature of seedling roots and shoots down the magnetic gradient, but could not verify their assumption that the curvature was caused by migration of gravi-sensitive starch grains. H. S. Alexander (North American Aviation Corp.) reported on some inhibition observed on barley seeds. V. Gerencser (University of West Virginia) and M. F. Barnothy (University of Illinois) described