different frequencies. He received the O.B.E. for the excellent work he did in telephony during the Great War. The Institution of Electrical Engineers awarded him the Fahie Premium and an 'extra' premium for two of his papers; he is now president of the Meter and Instrument Section of the Institution. He leaves the Post Office with the good wishes of all his colleagues.

South Africa's 'Men-Apes'

THE chief findings of a report on the teeth of the fossil 'men-apes' of South Africa by Prof. W. K. Gregory and Dr. Milo Hellman of the American Museum of Natural History, New York, which are cited in a communication by them in another column of this issue of NATURE (see p. 25) tend both to confirm, and at the same time to extend, the implication of Dr. Broom's diagnosis of the human affinities of his recently discovered relics of new types of fossil prehominids. As a result of a personal inspection of the finds, these two authorities, whose judgment carries conclusive weight in view of their experience in the examination of the dentition of fossil ape-forms from the Himalayan tertiary deposits, give it as their considered opinion that "the dentition of the adult forms described by Broom present many transitional or annectant conditions between the pithecoid and human stages". They go on to support and illustrate this pronouncement by reference to details of the dentition of one of these forms, namely *Plesianthropus*. For example, a canine of the female specimen is said to "require but little additional modification to attain the human status". What, however, is of special significance is that Prof. Gregory and his colleague find in the Indian fossil forms transitional stages leading to the almost human premolar of *Plesianthropus*, while another tooth of the South African type takes an intermediate position between *Sivapithecus*, one of the fossil anthropoids from the Siwaliks, and Peking man. A further significant suggestion, based on comparative evidence, is that the general condition of the teeth points to a stage of transition from the frugivorous habits of the ape to the omnivorous habits of man.

Phylogeny and Chronology in the Descent of Man

IT may be noted that the conclusions at which Prof. Gregory and Dr. Hellman have arrived in regard to the dentition of the South African fossil men-apes by no means dissipate, but rather intensify, the chronological difficulties which, as has been pointed out previously, arise from these discoveries and from the inferences drawn from them by Dr. Broom. A phylogenetic succession is in process of being established in South Africa which chronologically is at variance with—that is, is later in time than—the chronological position assigned on geological and palæontological evidence to early types, definitely human in character, found elsewhere, such as, for example, Peking man. In other words, this South African series is too late in date for inclusion in the human phylum, and must belong to an analogous line of development which ultimately dies out.

IN this connexion, reference may be made to a communication which has been received from Prof. Franz Weidenreich, of the Cenozoic Research Laboratory, Peiping, who directs attention to the fact that he had already arrived at the conclusion from the *Sinanthropus* findings that the adoption of the upright posture and gait had preceded the decisive changes of brain and dentition; and he goes on to suggest that the parts upon which Dr. Broom relies, especially the lower end of the humerus, are not so strikingly different from those of modern chimpanzees as are the shafts and proportions of the long bones. In regard to the chronological problem in particular, he refers to two communications by himself, one appearing in *Biomorphosis* (1, 1; 1938), and the other presented to the Congress of Anthropological and Ethnological Sciences, Copenhagen (1938), in the course of which the discrepancy between the morphological and the chronological sequences of hominid remains is set out in detail in relation to geographical distribution. The interpretation of the evidence put forward by Prof. Weidenreich in an attempt to reconcile the two series, is that we must not look for a single place of origin in man's evolution, but that there must have been at least four centres in which the line of man has developed independently: south-eastern Asia, giving rise to the Australian type of modern man; eastern Asia, giving rise to the Mongolian; Africa, where Rhodesian man filiates with the Negro; and Palestine or western Asia, from which the European type originated. He is careful to point out that this polycentric evolution of man does not imply a polygenetic origin.

The Kut Barrage Irrigation Scheme

THE last day of 1938 was notable in the sphere of civil engineering operations by reason of the completion of an important four-year undertaking (begun in December, 1934) which has comprised the construction in Iraq of a barrage, 1,500 ft. long, across the River Tigris, and, as an adjunct, of an irrigation canal, 2¼ miles in length and 230 ft. wide, with a head regulator to control the flow of water down the Gharraff River. The object of the Government of Iraq in executing the work is to bring into cultivation extensive areas of land on both sides of the Shatt-el-Gharraff from Kut to Ur, between the Rivers Tigris and Euphrates, on the traditional site of the Garden of Eden. Previously, supplies of water have been available for the Gharraff River only during periods of flood in the Tigris; henceforward, the Kut Barrage will retain the water of the Tigris and cause it to flow at all seasons along the diversion canal into the Gharraff River. The barrage has fifty-six sluice gates, each 20 ft. wide, to control the rate of flow, while a navigation lock will enable river craft to pass the obstruction and maintain the service of boats between Bagdad and Basrah. The formation of the canal involved the excavation of 1,600,000 cubic yards of material and the employment of 2,500 Arabs and Kurds. In addition, 250,000 cubic yards of concrete were placed in the barrage. The regulator at the head of the canal is equipped with seven sluice

gates, each 20 ft. wide, and there is a small navigation lock. The constructional operations were seriously hampered in November 1936 by extensive rains, which produced the highest flood on record on the Tigris for that season of the year, and rose with such unprecedented rapidity that the works were entirely inundated and brought to a standstill. A further difficulty was the extraordinary range of temperature, which varied from freezing point in winter to 125° F. in the shade in summer. The engineers for the undertaking were Messrs. Coode, Wilson, Mitchell and Vaughan-Lee of Westminster, and the contract was entrusted to Messrs. Balfour, Beatty and Co., Ltd., of London.

School of Oriental Studies

THE School of Oriental Studies in the University of London, it is stated in the report of the Governing Body for the academic year 1937–38, will vacate the premises at Vandon House, Westminster, now in temporary occupation, for the new building on the Bloomsbury site of the University, in March 1941. Owing to the inconvenience of present arrangements, removal at the earliest possible date has become imperative. At the moment, not only has the library to be housed in another part of Westminster, away from the academic and administrative work of the School, but also a large part of the collection of Chinese and Far-Eastern books, some 16,000 in number, brought together by the late Sir Reginald F. Johnston, professor of Chinese in the University of London, and presented to the library by his executrix, cannot be utilized and must be kept in store. The work of the School, which covers a wide range, now includes in addition to the study of languages, lectures on the religions of the Orient, Indian art, archæology, and philosophy, Burmese law, history, and economics, Buddhist law, and Indian social welfare. In the school of languages during the academic year instruction was given in Arabic, Persian, Sanskrit, Malay, Hindustani, Chinese, Japanese, and Burmese, the number of students in each being in the order named; while in the African Department there were students in such little known tongues as Efik, Ibo, Lunyoro, Shona, Tswana, Twi, Yao, Yoruba, and Zande. The extent to which these facilities are appreciated is shown by the fact that there were in 1937–38, 85 full-time students, 94 part-time, 197 occasional, and 73 inter-collegiate students, making 449 in all, an increase of 21 on the numbers of the preceding year. Since the death of Sir Montague Butler, chairman of the governing body, in March last, Lord Harlech, formerly Secretary of State for the Colonies, has accepted that office.

Geological Museum: Recent Acquisition

RECENT additions to the collections of the Geological Museum include a number of specimens of beautifully banded pink rhodochrosite, from Minas Capillitas, Catamarca, Argentina. This mineral, which is the carbonate of zinc, is of a rich pink colour, the specimens being of stalactitic formation. Although previously employed as a semi-precious stone, its use has hitherto been relatively rare: but rhodochrosite from the same source as the Museum specimens was recently utilized in London under the name of 'Inca Rose', in various Christmas gifts, to form an inlay at the edges of white marble-onyx cigarette boxes, and in similar ornamental work in which malachite or lapis lazuli is frequently used. The mineral was collected by Dr. Franz Mansfeld from an old mine, until recently deserted, situated at an altitude of about 10,000 ft., in the Andes. The Museum has also received as a gift from Mr. T. C. F. Hall a small collection of specimens of alluvial gold from Abyssinia and Korea. The Abyssinian specimens include a sample of gold dust, associated with particles of iron ore, in a feather quill, as brought in by the natives. Other acquisitions include two very fine stalagmitic and stalactitic specimens of melanterite (ferrous sulphate) from Millclose Mine, Warrencar, Derbyshire, presented by Prof. W. G. Fearnsides; and a large crystal of corundum or impure ruby some five inches in length and three inches in diameter. A number of specimens of seepages of mineral oil found associated with British coal-seams have also been placed on exhibition.

Articulation of Secondary with University Education

THE United States Office of Education has issued a report, entitled "Some Factors in the Adjustment of College Students", of elaborate investigations of university entrance conditions in relation to the varying needs and capacities of individual students. Seven factors have been studied: articulation of high-school and university subject areas, extra-curricular activities, lapse of time between leaving high school and admission to university, age on admission, high-school marks, aptitude and achievement test results, effect on university students of simultaneously engaging in gainful occupations. It is suggested that university courses be made to fit entering students either by dovetailing them with the high-school courses or "by setting up a few broad, comprehensive courses which challenge the interest and ability of the student" as in the University of Chicago (the humanities, the social sciences, the physical sciences, and the biological sciences). The report concludes with a formulation of the following desiderata: a more comprehensive system of record-keeping in the high-school for use in guidance of students; utilization by universities in admitting or guiding the student of as many items of knowledge concerning him or her as possible and, to this end, the provision by them of facilities for testing and interviewing them; integration of the work of the high school and the university through facilities for students of different levels of general scholastic aptitude; and shepherding of students into particular courses in accordance with their past achievements.

Library Service in the United States

A REPORT on library service, prepared by C. B. Joeckel for the Advisory Committee on Education, has been issued by the U.S. Government Printing Office. The survey indicates that the total library