of teaching methods, though not quite as much as some speakers proposed.

Students also maintained that the best way of liberalizing the education of a technical student is to combine the shortening of hours of class attendance with a great increase in 'union facilities'. It was pointed out how small are the union club rooms in most colleges compared with those in a university, giving as an example for comparison the new building of the University of London, and many speakers urged that the Ministry should insist that, in any approved scheme for the enlargement of a technical college, provision should be made for adequate rooms for student activities. One could not help being impressed by this demand, which would have the strong support of college authorities.

Dr. J. Topping, principal of Acton Technical College, who took the chair throughout the conference, said in his opening remarks that more had been written on technical education since the Second World War than on any other subject, and he hoped that we are now moving into an era of action. The present writer came away feeling that there was every hope that his optimism was justified. As Dr. Venables puts it in his recent book on technical education: "We shall make progress, so long as those, who believe that the next stage in technical education is an evolutionary process, realize that we have not all of geological time available in this rapidly changing world".

Mr. F. Copplestone, president of the National Union of Students, who thanked all the delegates for coming to the conference, said that it had been a success because of the contributions the delegates had made. This is true, but it is also true that this success could not have been achieved without the initiative of the National Union of Students, which is to be congratulated on providing this opportunity for all the partners in technical education to meet.

H. V. Lowry

INSTITUTE FOR SCIENTIFIC RESEARCH IN CENTRAL AFRICA, BELGIAN CONGO

REPORT FOR 1953

THE sixth annual report of the Institute for Scientific Research in Central Africa*, covering the year 1953, includes besides the report of the director, M. L. van den Berghe, brief reports from the presidents of the various scientific commissions and sections, lists of the sections, committees and commissions, with their membership, and a list of papers published during the year by members of the staff of the Institute and associated investigators; this last-mentioned list is supplemented by brief summaries of the papers. M. van den Berghe emphasizes the contributions which the work of the Institute has already made in the region of Belgian Central Africa in the field of physical and social anthropology, population statistics, the physics of high solar altitudes, biochemistry of foodstuffs and the experimental zoology of invertebrates, and refers particularly to the participation of the Institute during 1953 in a number of scientific conferences in Africa. The second Anglo-Belgian seminar in the human sciences was held at Kampala during February 23–28, 1953, and a third conference was due to be held in 1955 at Astrida and Lwiro. The first Anglo-Belgian seminar on nutrition was also held at Kampala, during February 18–20, 1953, and was concerned particularly with the comparison and discussion of results obtained in the field of nutrition in Uganda and the Belgian Congo and with visits to laboratories and institutions in Uganda and the exchange of techniques. A second seminar was projected at Lwiro in 1955.

A meeting of experts nominated by the Scientific Council for Africa South of the Sahara for the co-ordination of social research in Africa south of the Sahara met at Kampala during February 28–March 2, 1953. The conference recommended the publication of a series of brief accounts of the existing organization for social research and the appointment of an inter-African scientific correspondent to visit the different institutions and survey the work in progress in this field. Two further conferences in 1955 covering demography and economics, psychology, linguistics, ethnography and sociology were also recommended. An international conference for the protection of the fauna and flora of Africa was held at Bakavu in October 1953, and also an Anglo-Belgian Government conference at Kigali on the tsetse fly, at which it was agreed that the Institute should immediately commence a detailed study in the region of Kakitumba, including research on both *Glossina* and trypanosomes and the determination of the fly-belt.

Construction of the central library of the Institute at Lwiro was begun in January 1953, and a new station at Ituri, two hours from Lwiro, designed for the general study of tropical forest at a medium altitude, was planned for construction in 1954. The work of the Institute during the year included studies of the entomology of Ruanda-Urundi and ethnological studies among the Balega, which were designed to provide a course of lectures for the Colonial School at Brussels on aspects of parentage, family life and political structure and associations among the Balega. Measurements of solar energy in the visible spectrum were continued, and the equipment at Lwiro was further extended. The systematic and ecological study of the molluscs of Tanganyika continued, and the fauna of the north-east border of Lake Tanganyika was also studied, while investigations were commenced on the birds of Lake Kivu, and particularly of the seasons of reproduction of birds living nearly on the equator. The electrophoretic method is being used for studying the proteinæmia among indigenous races in Ruanda-Urundi and also the evolution of serum proteins in infants up to two years of age. Special attention was given to the study of kwashiorkor at Kivu, and a study was commenced of the factors influencing the productivity of the African worker in the Belgian Congo and especially in agriculture. Linguistic studies included a systematic one at Tshumbe, in the region of Mondja, of the language known as Otatela. To facilitate the collection and collation of neuropathological material, autopsy services for neurological cases have been organized. Numerous observations have been made on nutritional disorders, tuberculosis and sickle-cell anæmia; and researches were continued on *G. morsitans* and the biotopes of *Culex sylvestres* and particularly *Aedes simpsoni*, the transmitter of 'jungle yellow fever' in

* Institut pour la Recherche Scientifique en Afrique Centrale. Sixième Rapport Annuel, 1953. Pp. 229 + 4 plates. (Brussels: Institut pour la Recherche Scientifique en Afrique Centrale, 1956.)

Uganda. Observations on *Caecobarbus geertsi* Blgr. in the grottoes of the Lower Congo were completed, and studies were commenced into the emigration of the Banyarwandā and Barundi in East Africa, and the institutions of Bukahê and Bugabire. A study of the geographical distribution of the fish of the basin of the Ruzizi was completed in the first five months of 1953, and investigations of the stratigraphy of the groups of Urundi and of Ruzizi led to some definite conclusions. Other investigations were concerned with the African *Histoplasma duboisii* Vanbreuseghem, 1952, with the science of malnutrition and kwashiorkor and with the paludism of mammals and their invertebrate hosts.

THE SMITHSONIAN INSTITUTION

REPORT FOR 1954–55

THE report of the Secretary of the Smithsonian Institution for the year ended June 30, 1955*, which is accompanied by the financial report of the Executive Committee of the Board of Regents and by reports from the branches of the Institution as well as by those in the Library and on publications, welcomes the enactment of legislation providing for the planning and erection of a new museum building for the Institution. Congress has already appropriated 2,288,000 dollars for the immediate planning of this Museum of History and Technology, for which 36 million dollars are authorized, and the new Museum will house all the national collections that record and illustrate the political, cultural, industrial, scientific and military development of the United States. As planned, it will be both a museum of United States history and a museum of science, engineering and industry, and a series of modern halls illustrating the principal periods of that history from Colonial days to the present is planned, with other halls showing the development of particular devices or subjects, such as automobiles, mining, medicine, manufactures, engineering and science. It is hoped that construction will begin in 1957. Preliminary architectural studies were made during the past year for the projected new National Air Museum, and further progress was made in renovating major exhibits at the Institution.

Visitors to the Smithsonian Buildings totalled 3,895,017—nearly 250,000 more than in the previous year—and, with the estimated 3,476,584 visitors at the National Zoological Park and 814,932 at the National Gallery of Art, brought the total number of visitors to the Smithsonian Institution to 8,186,533. The Institution continues to administer the Bio-Sciences Information Exchange, which is charged with preventing the unknowing duplication of research support by the Armed Forces and other Government agencies; and the Exchange, which has developed techniques to maintain a rapid interchange of concise information on the support of research in the bio-sciences, reports that it has been able to supply adequate information in response to all requests. Among the 7,600,000 specimens received by the National Museum during the year were collections of mammals from Korea, Pakistan and Panama; birds from Panama; large collections of fishes from the Gilbert Islands, Liberia and the south-eastern United States; the W. N. Mann collection of ants; 3,200 polychæte worms, mostly from New England; four hundred corals from the Great Barrier Reef; plant collections from Mexico, Central and South America; thirty-five specimens of meteorites, two thousand Silurian and Devonian fossils from Canada; some three and a half million mounted foraminiferan specimens; an early Curtis steam turbine; the Dodrill–G.M.R. mechanical heart and important electrocardiograph equipment. Field work included an investigation of the plant mites and other types of small animal life in the Belgian Congo; an ornithological survey of Panama; and the collection of larvæ of small moths of the genera *Depressaria* and *Agoropterix* in Wyoming and adjoining States.

The Bureau of American Ethnology made progress with its archæological work on Southampton Island in Hudson Bay, and Dr. H. B. Collins continued to supervise the "Arctic Bibliography" which the Arctic Institute is preparing for the Department of Defence, Vol. 4 being issued in August 1954. Besides preparing his report on previous field researches, entitled "Modern Inter-tribal Organizations on the North-West Coast", Dr. P. Drucker initiated a programme of archæological research at the important Olmec site of La Venta, Tabasco, Mexico. Dr. F. H. H. Roberts continued to direct the River Basin Surveys, the field investigations under which consisted mainly of excavations; no palæontological studies were carried out. By June 30, 1955, archæological surveys or excavations had been made in 243 areas in twenty-seven States since field work was started in 1946; and, of the 4,345 sites located and recorded, 852 were recommended for excavation or limited testing. At the end of the fiscal year, 324 sites in forty-four reservoir basins in seventeen different States had been dug extensively or in part, and further details of the work of the three field parties operating in the Missouri Basin are given in the report as well as of field work in the Garrison Reservoir area.

The Astrophysical Observatory, in co-operation with the United States Weather Bureau, continued the calibration of Eppley pyrheliometers, and the simplification and automatic recording of silver-disk pyrheliometry. Solar radiation studies at the high-altitude station at Montezuma in Northern Chile were hindered by sky pollution due to smelting operations at copper mines, and at Table Mountain in Southern California a gradual increase in the amount of smog from the Los Angeles area has been noted for some years. The work of the Division of Radiation and Organisms on the photo-control of the formative and development processes in seedlings of the bean plant indicated that the far-red energy interferes with development by acting on a product of the photochemical reaction initiated by the red energy. In studies with the root-tip cells of broad bean (*Vicia faba*), it has been found that, if exposure to X-rays is preceded by exposure to red visible light, the incidence of chromosome damage brought about by X-rays is reduced by 30–50 per cent, but if exposure to X-rays is preceded by exposure to radiant energy from the far-red or near infra-red, the damage is increased by 30–40 per cent. Using differential centrifugation methods to fractionate avocado fruit tissue it has also been found that the fraction remaining after sedimenting cell walls, nuclear material, mitochondria, plastids and other particles within this size range, contains an enzyme system which, on the addition of auxin, markedly reduces the consumption of oxygen.

* Smithsonian Institution. Report of the Secretary and Financial Report of the Executive Committee of the Board of Regents for the Year ended June 30, 1955. Pp. ix+173+7 plates. (Publication 4320.) (Washington, D.C.: Government Printing Office, 1956.)