

The Lourenço Marques Meeting of the South African Association.

THE twentieth annual meeting of the South African Association for the Advancement of Science was held at Lourenço Marques, in the Lyceum, on July 10-15, under the presidency of Dr. A. W. Rogers. The meeting was well attended and was very successful. About fifty papers were read. An official welcome was given by the High Commissioner for Moçambique and the Mayor of Lourenço Marques. There were various visits and excursions to places of local interest, both on the Bay and inland, and an official banquet was given to members at the new Polana Hotel.

A popular lecture, illustrated by lantern slides, was given by Mr. C. Graham Botha, Keeper of the Archives at Cape Town, on "The Early Development of South Africa."

The South Africa medal and grant were awarded to Dr. I. B. Pole Evans for his contributions to botanical science in South Africa.

The presidential address by Dr. Rogers dealt with "Post-Cretaceous Climates of South Africa." Four types of evidence on which recognition of former climates depend were discussed. These were the character of the rocks during the period concerned, the shapes of the land surface resulting from long duration of more or less constant climatic conditions, the distribution of animals and plants, and the historical records of man; the lithological evidence is the most important for all but relatively recent times. Each of these factors was considered in detail as regards South Africa, the evidence being considered from post-Cretaceous times only. Historical records of the past climate in South Africa apply closely to present-day conditions, allowance being made for the progressive settlement of the country. From personal survey work Dr. Rogers concluded that in certain districts no deterioration of climate or marked loss of water has taken place during the last fifty years. The various lines of evidence point to the conclusion that during post-Cretaceous times the climate of South Africa has fluctuated within rather narrow limits; that there has not been a Pluvial period, if by that term is implied a long period of much greater rainfall over the whole country; that a general lowering of temperature in the Pleistocene may have given the Karroo and Southern Kalahari rivers longer periods of flow, but that this more humid era in those regions had come to an end long before human evidence can be drawn upon for an account of it; and that South Africa, like North Africa, the Americas and Australia, bears evidence to a shifting of the climatic belts in the Pleistocene and subsequent times.

The presidential address to Section A on "The Rôle of Astronomy in the Development of Science," was given by Dr. M. A. Peres, Director of the Campos Rodrigues Observatory, Lourenço Marques. He summarised ably some of the chief discoveries and laws in astronomical science, and showed their influence on subsequent research in other branches of physical science. Thus, astronomical observations led to the formulation of the laws of Newton, which opened a vast field of other researches. Similar astronomical observations leading to the work on the velocity of light were the first step towards wireless telegraphy. The indebtedness of optics especially, to astronomical research, was also indicated, and it was pointed out that the chief confirmation of Einstein's theory was dependent on astronomical observations.

"The Influence of Mineral Deposits in the Development of a Young Country" was chosen by Dr. E. T.

Mellor as the subject of his presidential address to Section B. This was first illustrated by reference to the Tsumeb Mine in South-West Africa and Broken Hill in Rhodesia. The Tsumeb Mine brought about the building of a railway from the coast to the mine, 350 miles away. The Broken Hill Mine practically determined the course of the main line of the Cape to Cairo railway. The railway system of the Union of South Africa has been influenced by the goldfields of the Witwatersrand. The tracing of the extension of these gold reefs eastwards, the location and exploration of new coalfields, and systematic boring for possible oilfields, all depended on an adequate geological survey. The extension of the Witbank coalfield, though proved and ready for easy exploitation, is suspended because of lack of transport and a market. The connexion of mining developments with research in other sciences was considered, and it was shown that in the gold industry South Africa possesses a field sufficiently extensive and stable to exert more than a temporary influence on the country generally.

The presidential address to Section C was given by Prof. D. Thoday, and dealt with "Carbon Assimilation" in plants. The great advances in the knowledge of the subject due to the work of Blackman in Cambridge and Willstätter in Berlin were summarised, attention being directed to the work done on pigments. The rôle of iron and of magnesium were also discussed. The application of the subject with special reference to South African conditions was detailed. The plants of the open veld are exposed to the full blaze of the sun through most of the year, and this is more than sufficient to enable an ordinary green leaf to assimilate all the carbon dioxide that it needs. Paler green or golden leaves demand more intense light than dark ones for their full activity. Consequently, veld plants have paler leaves, and in extreme cases the leaves are almost greenish yellow. Particulars of internal structure affecting depth of colour were also discussed, as were leaf forms and patternings, and it was emphasised that such features are not merely adaptations to a dry climate but that their effects on photosynthesis of carbon dioxide are probably of equal significance.

The presidential address to Section D was delivered by Dr. Annie Porter, her subject being "Some Modern Developments in Animal Parasitology." After a general introduction dealing with degrees of parasitism, specificity and the like, recent advances in protozoology were first considered. Attention was directed to the conflicting opinions as to the existence of races of *Entamoeba histolytica*. The work of Taute and Huber on the non-identity of *Trypanosoma rhodesiense* and *T. brucei*, as shown by direct inoculation of the human subject with game trypanosomes, was discussed, and attention was directed to work on induced herpetomoniasis in vertebrates. Flagellates of plants were described, especially those due to herpetomonads, some of which had been proved capable of infecting mammals; also the spirochætes, amœbæ, and other parasitic Protozoa found in plants and their reactions on their hosts were noted. Recent work on neuromotor apparatus in Protozoa, and on various organisms and filterable viruses associated with infective (spirochætal) jaundice, trench fever, and typhus were discussed. In helminthology the interesting life-histories of schistosomes in various snails, of Clonorchis in snail, fish and man, of Paragonimus in snail, crab or crayfish and man, and recent work

on the life-histories of such organisms as *Fasciolopsis buski*, Heterophyes, Ascaris, and Strongyloides were detailed. In entomology hyperparasitism and its possible applications, Stomoxys as the transmitter of North African trypanosomiasis, the rôle of *Trombidium akamushi* in river fever in Japan, and the part played by various ticks in a peculiar form of human motor paralysis in America were among the topics discussed. In conclusion, some of the sociological applications of parasitology were mentioned, and the need of more provision for research work was emphasised.

The presidential address to Section E, by Senator A. W. Roberts, related to "Certain Aspects of the Native Question." The changes in national life and in the mental attitude of the native, due to gradual disappearance of the old tribal system, were discussed. The growing desire for individual possessions and the movement among the younger generation of Bantus for racial solidarity were considered as natural steps in the evolution of a race. The immigration of the native into industrial areas, the change in habit and in outlook, the bad features of location life, and the need for proper housing were emphasised. The history of native education was traced, and it was shown that the system in vogue at present had served its purpose. New ideals in native education should be in the direction of material progress, better means of agriculture, and village and home industries. The principles of good citizenship need impressing on the native as well as on the white. The extension of opportunities of work for educated natives and their feeling regarding their present economic limitations were discussed. The political future of the native and the extension to other areas of the system successful in the Transkei were considered. Mutual understanding between white and native is necessary.

The presidential address of Dr. J. Marius Moll to Section F was entitled "Certain Mental Disorders which may be regarded as Preventable." Mental disorders were considered in two groups—the "intoxication" psychoses caused by a poison in the wide sense and producing changes in the brain, and "germ" or "functional" psychoses where no causative poison occurs, no microscopic alterations, and no dementia. The intoxication psychoses due to other illnesses, e.g. enteric, were briefly noted. Alcoholic insanity, with its great danger of recurrences, was considered. In the case of inmates of native mental hospitals in South Africa, dagga (*Cannabis indica*) may be an important etiological factor. Syphilis is decreasing in South Africa. Malaria is not only a factor in some cases of insanity but also in intellectual retardation and enfeeblement in the country. Dementia precox is serious, 21 per cent. of the admissions to mental hospitals in the Union being due to this. The work on internal secretions and on psychopathology was mentioned. In the germ psychoses the personality of the patient is the main factor. The rôle of sex-complexes was shown to have been overrated by Freud and some of his followers. The reciprocal reaction between the personality and the circumstances of a patient had to be reckoned with. The need for study and adoption of the principles of mental hygiene was urged. Heredity was a serious factor in insanity. If segregation and non-propagation of the mentally unfit were enforced the future incidence of this condition would decrease by 50 per cent.

It is only possible to notice some of the interesting papers read before the various sections. Nearly half of the papers were contributed to Section D.

In Section A a useful paper was read by Mr. R. H. Föx on the waterworks department of the Antofagasta (Chile) and Bolivia Railway Company.

In Section B, Mr. B. J. Smit contributed a paper on his investigations of different methods of testing Babcock milk-bottles; the volumetric method was preferred. Mr. C. O. Williams continued his account of experiments on the chemical control of cattle-dipping tanks; the addition of coal-tar disinfectants to arsenical dips was uneconomical. Dr. P. A. Wagner described various specimens of Descloizite from South-West Africa.

In Section C, Prof. G. Potts continued his account of experiments on the pollen of the pepper tree as a cause of hay fever in Bloemfontein. Prof. J. W. Bews and Mr. R. D. Aitken discussed the measurement of the hydrogen ion concentration in South African soils in relation to plant distribution. Mr. Aitken also described the effect of slope exposure on the climate and vegetation of a hill near Maritzburg. Mr. A. J. Taylor dealt with the composition of some indigenous grasses both from the chemical and the botanical aspects. The economic values of the grasses were indicated.

In Section D, Mr. J. Sandground read a short paper on *Aphelenchus phyllophagus*, parasitic in chrysanthemums, noting its effects in South Africa. Prof. E. H. Cluver dealt with the effect of temperature on the rate of growth in young animals; the greatest increase in weight occurred during the cooler months. Mr. A. D. Stammers described keratomalacia among rats suffering from deficiency of vitamin A. Dr. C. P. Nesor sent an interesting paper on the blood of equines. Prof. E. Warren described and illustrated the early stages of development of the non-aquatic tadpole of *Anhydrophryne rattrayi*; predetermination of sex occurred in the eggs. Prof. J. E. Duerden discussed old and new views on the origin of feathers from scales. Prof. Duerden and Mr. R. Essex described the degeneration of limbs in species of Chamæsauran lizards. Prof. Duerden and Mr. V. FitzSimons recorded a series of variations found by them in the tenth rib of the penguin. Dr. F. G. Cawston described and exhibited specimens of Mollusca from lagoons in Natal. Prof. H. B. Fantham continued his account of some parasitic Protozoa found in South Africa, noting the occurrence of herpetomonads in cabbage plants. Prof. Fantham and Miss E. Taylor described the continuation of their researches on Protozoa found in some South African soils. Mr. C. B. Hardenberg discussed economic entomology in Moçambique. Dr. L. Soro-menho described, from the hygienic point of view, various native wines and spirits made in Moçambique. Dr. M. M. Prates presented a contribution to the study of human parasitology in Moçambique, and he also described the various diseases of the eyes occurring there. Mr. J. Hewitt discussed ancient southern land connexions of Africa. The section considered favourably a draft bill for the establishment of a national park and game reserve under the direct control of the Union Government.

In Section E, Rev. C. Pettman contributed further remarks on Hottentot place-names. Rev. H. L. Bishop read interesting papers on Si Ronga proverbs and folklore and on the descriptive complement in Si Ronga. Madame V. Gomes discussed the N and L intervocalic in archaic Portuguese. Prof. W. A. Norton dealt with Dr. Theal's historical work on South-East Africa, and pleaded for a continuance of such work. He also exhibited a glossographic map of South Africa.

In Section F, Mr. C. G. Botha illustrated the early history of the Cape Province by a consideration of

Dutch place-names. Mrs. Mabel Palmer discussed some Australian proposals for a wage varying in proportion to the size of the family. Mr. F. S. Livie-Noble outlined some practical applications of modern psychology. There was a discussion, opened

by Captain A. Cardozo, on the currency problem in Moçambique.

The next annual meeting of the Association will take place in July 1923 at Bloemfontein, under the presidency of Prof. J. D. F. Gilchrist. H. B. F.

Mental Character and Race.

IT is a commonplace of anthropological study that, in investigating the customs of primitive races, the difference in level of culture between observer and observed entails a difference in mentality and outlook which it is one of the aims of anthropological training to overcome. But it is also a matter of common observation that this same difference exists, if in a lesser degree, between peoples at the same stage of civilisation, and even between individuals or groups of individuals forming part of the same people or nation. The works of travellers, geographers and historians, both ancient and modern, abound in characterisations of the mental qualities of the various peoples of the world, both civilised and uncivilised; but when the ethnologist comes to the investigation of the problem of racial differences in mental qualities, he is confronted with a two-fold difficulty. On one hand he is, at present, for the most part, dependent upon empirical observation from which it is difficult to eliminate the personal factor, and, on the other hand, it is not clear how far, if at all, mental characters can be correlated with the physical characters upon which the ethnologist bases his classification of races. In the solution of this problem it is essential that the anthropologist should secure the co-operation of the psychologist, and it was with this object that a discussion on "Mental Character and Race" was held in a joint session of the Anthropological and Psychological Sections at the meeting of the British Association at Hull in September last.

The discussion was opened by Prof. J. L. Myres, who said that the principal consideration to be submitted to psychologists and ethnologists alike was that in many individuals in any modern society of mixed ancestry, dispositions and faculties differ. Such mental qualities are inherited like physical qualities and characters. It might be assumed that they stood in some direct relation to some element in the nervous system. Further, some mental qualities seemed to be associated with some physical characters, as for example a "fiery" temperament with red hair. Some of these physical characters are racial, or (like red hair) seem to result from crossing of racial elements. The analogy from the artificial selection of the breeds of domesticated animals indicates that it is possible to enhance or combine mental qualities. It did not always happen that the individual exhibited the characteristics desired, as in the case of the "gun-shy" pointer, and the "gun-shy" member of a military family. It would appear, however, that the hypothesis of correlation and transmissibility of psychical characters stands the test of practice in domesticated animals, the nearest analogue to the long domesticated animal man, a single species broken up into strongly marked racial strains.

Prof. Myres went on to point out that the older ethnologists characterised racial types by mental as well as physical characters, and quoted as an example the character of the Northern Mongols in Keane's "Man, Past and Present." He pointed out that such a characterisation included: (a) a description of mere psychological reactions to external stimuli conceived as characteristic of the racial strain and

capable, like brachycephaly, of being used to refer an individual to his racial type; (b) a description of social reactions (*e.g.* "sense of right and wrong") in which a social, cultural element was introduced. The individual has a post-natal experience as well as a pre-natal equipment, and in investigation it might be difficult to eliminate disturbing factors. Prof. Myres stated, however, that he himself had found that the offspring of British fathers and Greek mothers brought up in a Greek environment differed as markedly from pure Greeks in their attitude towards discipline and labour as they did in physique, temperament closely following breed.

Modern ethnology, relying on analogue and experiment, had made most progress in the department of sense perception; but even here one of the first results had been to show how intimately the social factor was involved, as for example in inducing a native to give a fair trial to an experiment beyond his social horizon and in eliminating the disturbing factor of an inadequate language, *e.g.* in the case of colours.

In summing up the problem, Prof. Myres said that the ethnologist, and, in particular, the social anthropologist, must define more clearly the elementary terms in their characterisation, while the psychologist must go further in laboratory work on such complex manifestations as the "sense of right or wrong," irrespective of race or breed.

Dr. C. S. Myers, president of the Psychological Section, said that the chief determinants controlling mental characters were heredity and environment. On the physical side environment—climate, temperature, food supply, and the like—acted directly and indirectly, especially on the internal secretions which affect the functions of the emotions. Environment must have played an important part in producing such differences as distinguished Americans, Australians, and New Zealanders; but it was not known with certainty how these differences came about, nor how permanent they were likely to be. Different parts of the same country exhibited distinguishing characteristics. In England, for example, Yorkshire and Wales had for long been noted for musical ability. What did this mean in terms of race? Where there was lack of ingenuity or artistic skill, were these qualities latent, awaiting the encouragement of a more favourable environment? Rivers had shown that contact of culture produced something new, and apparently the same applied to an individual.

Dr. Haddon said the results of the psychological observations made by the Cambridge Expedition to the Torres Straits had been largely negative. A scheme should be worked out for the observation of the emotional content of the attitude of primitive peoples towards their own ceremonies.

Dr. Cyril Burt said that experimental tests of intelligence and other inborn mental capacities usually yield a correlation of about 0.5 between the performances of parents and those of their children. Thus, mental qualities seem to be inherited to much the same degree as physical. Small but distinct and constant differences are discernible between the averages for different nations and races. On the whole, however, individual differences tend almost to swamp the group differences. On the temperamental side,