



SATURDAY, MAY 26, 1934

No. 3369

Vol. 133

CONTENTS

	PAGE
Pride and Prejudice in Africa	773
The Complete Guide to Astrophysics. By Prof. F. J. M. Stratton	775
Himalayan Poppies	777
Social Values. By W. G. L. C.	778
Short Reviews	779
Twenty-One Years of Fruit Research at East Malling Canadian Water Power Developments during 1933. By Dr. Brysson Cunningham	782
World Climate during the Quaternary Period	785
Obituary :	
Prof. W. H. Welch	786
Mr. H. G. Miller	787
News and Views	787
Letters to the Editor :	
Radio Exploration of the Ionosphere.—Prof. E. V. Appleton, F.R.S.	793
Atomic Disintegration by 'Non-Capture'.—Prof. William D. Harkins and David M. Gans X-Ray Photographs of Crystalline Pepsin.—J. D. Bernal and Miss D. Crowfoot ; W. T. Astbury and R. Lomax	794
Transitions to Optical Levels in the Argon <i>L</i> X-Ray Absorption Spectrum.—Dr. J. A. Prins	795
Isotope Effect in the Band Spectrum of Aluminium Hydride.—W. Holst and Prof. E. Hulthén	796
Enzyme Catalysis of the Ionisation of Hydrogen.—Dr. B. Cavanagh, Dr. J. Horiuti and Prof. M. Polanyi	797
Breathing Movements of Whales.—R. W. Gray Active and Inactive Forms of the Hormone Promoting Comb Growth.—A. A. Adler	798
A Provitamin A other than Carotene?—Eugene Boyle	798
China and the Maya Calendars.—Dr. Herbert Chatley	798
Research Items	799
Dipole Moments and their Interpretation. By S. S. University Statistics of Great Britain	803
Quantitative Methods of Biological Assay	804
University and Educational Intelligence	805
Science News a Century Ago	805
Societies and Academies	806
Forthcoming Events	808
Official Publications Received	808
Recent Scientific and Technical Books	Supp. v

Editorial and Publishing Offices :

MACMILLAN & CO., LTD.

ST. MARTIN'S STREET, LONDON, W.C.2

Telephone Number : WHITEHALL 8831

Telegraphic Address : PHUSIS, LESQUARE, LONDON

Advertisements should be addressed to

T. G. Scott & Son, Ltd., 63 Ludgate Hill, London, E.C.4

Telephone Number : City 4211

Pride and Prejudice in Africa

DESPITE the obligations which, in common with France and the Union Government of South Africa, Great Britain has incurred in accepting the trusteeship of some four millions of Africans under mandate from the League of Nations, a rather vague pride in past achievements in suppressing the slave trade, and a careless prejudice against any claims of the native races to be more than hewers of wood and drawers of water, colour much of such public opinion as is from time to time called into existence by affairs in Kenya Colony and Tshekedi or similar incidents. The situation is all the more deplorable in that during recent years there has been available a wealth of material which can assist the intelligent layman to pass accurate judgment on African affairs, such as the reports of the East African Commission of 1924, under Mr. W. G. A. Ormsby-Gore, and of the Hilton Young Commission in 1929, Lord Lugard's studies of the principles of administration of backward races, and so on.

The most disturbing forces in the life of Africa at the present time arise from the insistent demand of the rest of the world for the products of tropical Africa. This demand has set in motion economic forces which are producing revolutionary changes in vast areas where European settlement is impossible. They are disintegrating the fabric of tribal life and creating problems of administration which cannot be left alone, above all in the light of the calamitous experience of South Africa. Apart altogether from the new standard of administration to which we are committed in Tanganyika Territory, and which has been accepted as the standard of administration elsewhere in our African territories, industrial conditions are posing problems which make a policy of *laissez faire* as dangerous from an economic point of view as it is morally indefensible.

Of these problems the study of conditions in the copper belt of Northern Rhodesia, with particular reference to the effect of the mines upon native society and upon the work of missions, carried out in 1932 under the auspices of the Department of Social and Industrial Research of the International Missionary Council*, provides many striking illustrations. The copper belt of Northern Rhodesia was chosen as the chief field of study because its

* Modern Industry and the African: an Enquiry into the Effect of the Copper Mines of Central Africa upon Native Society and the Work of Christian Missions made under the auspices of the Department of Social and Industrial Research of the International Missionary Council. By J. Merle Davis. Pp. xviii+425. (London: Macmillan and Co., Ltd., 1933.) 12s. 6d. net.

mines are among the latest that have been opened in Africa, and they have been developed with a vigour and on a scale that have attracted a large native working population. In addition, the position of these mines between those of the Belgian Congo and the Union of South Africa, with their widely contrasted labour policies, gives Northern Rhodesia an opportunity to profit from the experience of its neighbours. Many of the acutest difficulties in Africa to-day are unfortunately the direct result of neglect, sometimes deliberate, of the lessons of history.

This study makes it abundantly plain that the working of the copper mines is raising problems which go far beyond the immediate social and economic problems in the vicinity of the mines. The withdrawal of labour from the native areas, with a consequent shortage of man power for cultivation of essential food crops, is threatening the whole economy of native life, quite apart from the disintegrating influence of the new outlook and new needs acquired by natives working on the mines. The structure of native society is being knit with our own in ways which it is now well-nigh impossible to disentangle.

It is, of course, clear that, at the mines themselves, problems of social welfare present an important field for scientific study and one in which co-operation between the mines, missions and Government is highly important. Such co-operation based on a careful study of the actual conditions might make a contribution to a better understanding between the natives and Europeans, to the education of native society and the enrichment of the community at the mines, and through it and through the network of native interests created, to the foundation of an urban native society.

Economic conditions present a particularly strong challenge. Co-operation of the type just visualised is fully as important in relation to the building of permanent communities round agriculture through the rotation of crops, use of fertilisers, soil conservation, etc., in place of the semi-nomadic native methods, which are inadequate to avert the continual threat of famine. Much might be done by co-operative methods to supplement the present training and experience of the native employed on the copper belt, so as to increase his economic power on returning to rural life. Agriculture in Africa to-day in all its aspects—technical, social and economic—provides a field in which intensive scientific study is urgently

needed, and it is a sore reproach to the administration in Northern Rhodesia and elsewhere that funds for demonstration and experimental work under the Department of Agriculture have been cut to the bone.

However, just when science is affording growing support to the administration in its efforts to develop self-government in accordance with native law and custom, economic conditions and the impact of modern industry are strengthening the disturbing or opposing forces. Discontent with the tribal system and its inadequate adaptation to the industrial revolution in Africa was a prime factor in the unrest which led to the Tshekedi incident. An important paper by Dr. R. S. Rattray at the Leicester meeting of the British Association directed attention to some of the doubts and misgivings regarding this system which are arising in spite of its promise for the preservation of the African national genius.

The attack on the system of indirect rule comes partly from its tendency, in the absence of adequate anthropological knowledge or experience on the part of those administering it, to build up centralised African autocracies out of harmony with African institutions and traditions. It comes partly from the growing class of educated tribesmen, who can find no place in a system which seems to discount Western education and Western lines of progress. This element is being strongly and continuously reinforced by the wage-earning class, who have similarly been detribalised by their employment at the mines and have equal difficulty in finding a place in tribal society.

These factors are shaking the existing system to its foundations. There is widespread belief among the educated Africans, which was encouraged by the reports of the Phelps-Stokes commission, that indirect rule and anthropology are veiled attempts to keep the African in his place. Without the co-operation of the educated native, the whole structure of indirect rule must crumble, and the fruits of anthropological research must be lost. Only a determined attempt to develop an intelligent native leadership and a sound public opinion are likely to save the situation, and here once again success will depend on adequate co-operation and harmony between industry, missions, and Government. In each sphere there is need of fuller sympathy depending on accurate knowledge of native religious beliefs and old customs.

The absence of that sympathy accounts directly

for much native unrest, as well as for recent mistakes in administration which have augmented such unrest. Unrest is strongly reinforced, moreover, by the disproportion between the sums collected from natives and Europeans in taxation and the expenditure of those sums on social welfare and educational work among the natives. From an industrial point of view, the importance of sympathy and understanding of native customs and beliefs is already being recognised, but the significant contribution of scientific work in these fields in establishing a relation of mutual confidence and respect is imperfectly apprehended by industry.

From whichever aspect we survey them, however, African problems provide a surpassing field for scientific investigation and endeavour, and the report before us indicates yet again some of the more important lines of work—the study of the various problems affecting public health whether in the mines or in the agricultural communities; the improvement of the standard and quality of native agriculture both in respect of food and of economic crops; provision of adequate transport in regard to the marketing of African produce and the mobility and efficiency of labour; and the development of education so as to assist the native, whether as a producer or as a wage-earner, to advance in the scale of civilisation and assimilate such moral controls as will enable him to resist the dangers and yet to utilise the advantages of increasing wealth.

Here is a programme in which scientific work must play a decisive part, but there is an even more important contribution which science may yet make. In a brilliant criticism of the Rhodes lectures of General Smuts, Mr. J. H. Oldham has pointed out that just because Africa is only at the beginning of its development, it may offer one of the most fruitful fields of experiment in regard to the place of expert knowledge in political affairs. What is needed is a far-sighted policy directed towards the economic development of the great resources of Africa on scientific lines in the interests of the native inhabitants, the immigrant European and Indian communities, and the world at large, and at the same time promoting the physical, intellectual, moral and social advance of the African peoples. Missions, no less than Government and industry, must have a clearly defined policy, and there is no room in such a policy for prejudice.

The new possibilities of service which science

has opened up in dealing with the problems of dependencies are as yet largely unappreciated. To urge that the scientific outlook and method should become an increasing factor in government is not to advocate the rule of a bureaucracy. It offers much greater assurance that the human factors will be fully considered, that account will be taken of the prejudices and beliefs of all parties and not merely of those of one section, and that an honest attempt will be made to sort out the real cause of unrest. The possibilities of mastery which science has given us in problems of government propound moral questions the answers to which depend on our scale of values, and the application of scientific thought and method to African problems will, in the end, be justified by the ability of science to keep those who use it loyal to the conceptions of disinterested service implicit in the spirit of science itself.

The Complete Guide to Astrophysics

Handbuch der Astrophysik. Herausgegeben von G. Eberhard, A. Kohlschütter und H. Ludendorff. Band 1: *Grundlagen der Astrophysik.* Teil 1. Pp. xii+564. 99 gold marks. Band 2, Hälfte 1: *Grundlagen der Astrophysik.* Teil 2/1. Pp. xi+430. 69 gold marks. Band 2, Hälfte 2: *Grundlagen der Astrophysik.* Teil 2/2. Pp. vii+431-752. 57.20 gold marks. Band 3, Hälfte 1: *Grundlagen der Astrophysik.* Teil 3/1. Pp. x+474. 77 gold marks. Band 3, Hälfte 2: *Grundlagen der Astrophysik.* Teil 3/2. Pp. viii+475-832. 62 gold marks. Band 4: *Das Sonnensystem.* Pp. viii+501. 78.80 gold marks. Band 5, Hälfte 1: *Das Sternsystem.* Teil 1/1. Pp. x+574. 99 gold marks. Band 5, Hälfte 2: *Das Sternsystem.* Teil 1/2. Pp. x+575-1156+2 plates. 99 gold marks. Band 6: *Das Sternsystem.* Teil 2. Pp. ix+474. 68.70 gold marks. (Berlin: Julius Springer, 1928-1933.)

THE need for such a work of reference as is supplied by the "Handbuch der Astrophysik" has become growingly obvious as successive volumes have appeared. The reviewer can speak from personal experience of its extreme usefulness in the observatory library and of its general completeness, within its own scope, as a work of reference. The articles contained in the different volumes may be divided into three groups—the theoretical, the instrumental or optical and the observational. It must not, however, be supposed