

If it be admitted that the Hudson Bay Company traded cowries, it must have been due to having seen such already in use by the Indians, for without this appreciation of the special mystical value of the cowrie there would have been no demand for them. On the west coast of Africa the cult of the cowrie was certainly not first introduced there by the white traders of the fifteenth century; they found the blacks already in possession of these white shells, the custom of using them and the superstitious reverence attached to such shells having filtered through Central Africa ages prior to the advent of the whites. It is only natural that full advantage should have been taken by traders, and thus an enormous trade in these shells sprang up. So far as I am aware there is no evidence that the Hudson Bay Company traded in the money-cowrie.

Mr. Wardle's arguments do not explain the remarkable identity in the association of the money-cowrie with medicine ceremonies in places so far apart as Africa and America. In both these continents the cowrie is regarded as the "symbol of life"—a distinction which no other shell enjoys.

In a magazine article he has previously expounded the procedure of Columbus in introducing the cowrie, *C. moneta*, into the New World. But in his account, the gist of which appears in his foregoing letter, he omits the most wonderful episode of his "wonder-tale," as he himself calls it—I refer to the fact that after all the imaginary wanderings and episodes on sea and land, the cowries should eventually have come to rest in the heart of the American continent, and, "of course purely by accident," have become linked up with the identical beliefs and fantastic practices with which they are associated in Africa, India, and eastern Asia.

To such lengths does the American ethnologist go rather than admit the patent fact that these shells, along with the associated beliefs and practices, were taken from eastern Asia to America long before the time of Columbus.

J. WILFRID JACKSON.

Manchester Museum.

#### Field Glasses for Army Use.

SOON after the outbreak of the war, my father, Lord Roberts, asked the public to lend their glasses for the use of the Army. After two years I think your readers may be glad to have some particulars of the result of his request.

Upwards of 26,000 glasses have been received, without reckoning those which, in pursuance of my father's suggestion, have been collected in Australia, the Malay States, and elsewhere, and issued forthwith to the local forces on their way to the seat of war. The instruments sent comprise every type, and have been classified and issued according to the needs of different units. Particularly useful have been the fine prismatic glasses sent, which have been allocated to artillery and machine-gun units, according to their power; large mounted telescopes for batteries, deer-stalking telescopes for gunners and snipers, and good old-fashioned non-prismatic racing glasses for detection of the nationality of aircraft, locating snipers, signalling by disc, collecting wounded, and musketry instruction.

I am indeed grateful for the way in which my father's appeal has been met. British people all over the world have given their best, recognising that, in spite of the fact that their glasses are on loan and that the organisation for their return has been arranged, the chances of loss are many, and that they may never get them back.

When I think of the enormous numbers of good glasses sent, it may seem ungracious to ask for more, but the demand is still great. I am told that at watering-

places and on racecourses and elsewhere large numbers of glasses are still to be seen in private hands, and to the owners of these I would once more appeal. I should add that we have been entrusted by the Ministry of Munitions with the purchase of individual glasses from those who cannot afford to lend them, and that the address for sending glasses for either purpose is the same. Every good glass (except opera-glasses) and every telescope (except toys) is wanted for the service of the country.

December 18.

ROBERTS.

Address for sending:—The Manager of Lady Roberts's Field Glass Fund, National Service League, 72 Victoria Street, S.W.

#### SCIENCE AND INDUSTRY IN AUSTRALIA.

THE second report of the Executive Committee of the Advisory Council of Science and Industry for the Commonwealth of Australia shows that energetic steps are being taken to provide and set in motion the necessary machinery for the promotion of industrial research in the Commonwealth. Strong committees have been formed in all the States with the exception of Tasmania, and it is hoped that this State will soon take action and complete the scheme recommended by the Advisory Council.

The Executive Committee has commenced its work in a methodical manner by making inquiries with the view of compiling information regarding Australian industries, problems arising in connection with them, the laboratories and personnel now available for research, and the facilities for the education of future investigators.

We look forward with considerable interest to further reports to learn what conclusions are arrived at as to the education of the research workers of the future. The leaders in this research movement in Australia are, of course, familiar with all our educational systems in the Old Country, and, indeed, many of them are graduates of British universities. With the special problem before them of training research workers, it will be interesting to see to what extent they will go along the old lines, or whether they will recommend new methods, having fewer Education Acts and educational interests to take into account.

The Executive Committee, since its first report a few weeks previously, has been able not only to complete the machinery of the scheme, but also to consider many suggested researches. The broad character of these shows that the committee intends that its functions should include all types of industries that can be benefited by research. Problems relating to engineering, chemistry, gold-mining, diseases of cattle, agriculture, bread-making, and other matters appear in the list.

We notice that a special committee has been appointed to deal with the standardisation of physical apparatus for the teaching of science in the technical and other schools and colleges of Australia. The object is to enable the apparatus to be made in Australia, as it is inconvenient to depend on supplies imported from a great distance.



We sometimes wonder whether there is not too much standardisation in apparatus for elementary teaching. Instrument-makers are, of course, a necessity for specialised and accurate instruments, but it might be better if schools and colleges depended more on their own workshops.

The work already accomplished in Australia, and indeed also in Canada, shows that the movement towards research methods in industry is going on all over the Empire, and it is encouraging to know that the necessary co-operation, without too much centralisation, is being arranged between the councils operating abroad and the Advisory Council at work in London. Sufficient organising machinery would seem to have been provided both at home and in Australia and Canada. The supply of trained workers is the important matter, and that brings us back to our educational systems. Will the universities be able to give the necessary care to research to enable them to meet the demand for trained investigators that we hope to see in the near future? If they are to do so larger staffs will be necessary, and there must be less school-work in the universities. There are few university professors who do not spend a large portion of their time teaching school-work. Higher entrance examinations would remedy this evil, but the university is not always so rich that it can ignore the question of students' fees.

In connection with the establishment of this Federal research scheme in Australia, it is interesting to turn to the report of the British Science Guild adopted at the annual meeting on July 1, 1915, and to find that so early as January, 1914, the South Australian branch of the Guild had drawn up plans for a Federal Institute for Original Research which were to be brought before a conference of the Australian Premiers. The institute proposed by the Guild was designed to give special attention to agriculture, and to undertake "research work beyond experimental farming." The Guild realised the importance of studying from a research point of view everything underlying the successful use of the land, including the well-being in every respect of the people engaged in farming operations. The list of subjects mentioned above, which the executive committee deals with in its report, shows that agriculture in all its bearings is receiving attention, and in this respect the idea of the South Australian branch of the British Science Guild has certainly borne fruit.

It would be well for us to consider in this country whether our agricultural research deals sufficiently with matters "beyond experimental farming." Experimental farming in its narrower sense can only lead to improvements in detail. Research work of a more fundamental character is required in agriculture as in other industries. The schemes adopted since the beginning of the war provide for such research work in connection with our manufactures, but it is not sufficiently clear that we intend to give the necessary attention to fundamental research bearing on agricultural pursuits.

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#### THE ERADICATION OF SLEEPING SICKNESS FROM PRINCIPE.<sup>1</sup>

PRINCIPE is one of a group of four islands in the Gulf of Guinea. It is 17 kilometres long and 10 kilometres wide, and is 200 kilometres distant from the mainland. The main export of the island is cacao; sugar-cane, coffee, and palm kernel being practically negligible. For the cultivation of the cacao crop labour has been imported in the past from the African mainland. In all probability among these labourers there would be cases of sleeping sickness. These in themselves would constitute no danger to the island population or to their uninfected fellow-labourers, but in Principe unfortunately the carrier tsetse-fly, *Glossina palpalis*, also existed, and sleeping sickness mortality became so great that the economic life of the island was gravely menaced. The annual mortality was about 200 in a population of 3800 (average), so that in twenty years the mortality would be in excess of the total population.

How and where the fly was first imported (if it were so) is a matter of conjecture, but it is thought that this occurred in 1825 with the importation of cattle and slaves, and though so far as we are aware there are no other records of the fly putting to sea, Fernando Po, 40 kilometres from the coast, is also fly-infested, whereas San Thomé, 130 kilometres south-west of Principe, is free from fly and likewise from sleeping sickness. As regards the distribution of the fly in the island, it is practically identical with that of the wild pigs. Neither is found higher than 250 metres above sea-level. In the case of the pig this distribution is determined by that of the oil-palm, on the fruit of which the pigs feed; but how far it is a case of the fly following the pig, or the latter finding security in the haunts of the fly, is a matter of some doubt.

The section of the work dealing with the trypanosomes of various animals, pig, ox, mule, dog, is unfortunately incomplete. A dimorphic trypanosome—that is, one showing flagellar and aflagellar forms—was found in the ox, dog, and mule, but its identity is not established. It may be the dimorphic trypanosome common in cattle in Africa, *T. ugandae* (dimorphic form of *T. brucei*), or it may be *T. gambiense*, though cattle are not definitely established as hosts of this trypanosome of man. Whether, too, the human trypanosome of Principe is a special variety of *T. gambiense* must remain doubtful, as the fallacies of the biometric method of distinguishing trypanosomes introduced by Bruce and here adopted are so many that its usefulness is problematical. This book gives an account of the results obtained by the third mission dispatched to study sleeping sickness by the Portuguese Government, the first having set to work in 1871. Knowledge of the subject has increased greatly since that time, when indeed the cause of the disease was unknown, but the last mission was so successful in the practical application of this knowledge that the disease,

<sup>1</sup> "Sleeping Sickness. A Record of Four Years' War against It in the Island of Principe." By B. F. Eruto da Costa, J. F. Sant'Anna, A. C. dos Santos, and M. G. de Araujo Alvares. Translated by Lieut.-Col. J. A. Wyllie. Pp. xii+260. (Published for the Centro Colonial, Lisbon by Baillière, Tindall and Cox London, 1916. Price 7s. 6d. net.