

burning in its relation to stock-diseases. Veld changes resulting from burning may so alter the whole ration-selections of the grazing animals that they may commence browsing on widely differing plants, formerly avoided, and often of an inimical character.

In Section D, Dr. Annie Porter read a paper on the occurrence of leucogregarines in South Africa; two such occurrences—one in a dog and one in a rabbit—had been observed. Prof. Fantham recorded the presence of various parasitic protozoa in South African fishes and amphibians; and Dr. F. G. Cawston gave an account of the cercariæ which attack South African snails.

The Rev. H. A. Junod described before Section E the customs of the Baronga in relation to smallpox. They had practised inoculation with the virus for many decades, using the serous fluid invariably from children or from old people, *i.e.* from those who might be called asexuate. The Hon. Mr. Justice Jackson read a paper on the medicine-man in Natal and Zululand. Unqualified men are allowed to practise on payment of a fee, and more than 1400 of these men have taken out licences. Dr. J. B. McCord also contributed a paper on Zulu witch-doctors and medicine-men, and described some startling surgical operations performed by these with no better instrument than a piece of broken glass. The Rev. J. R. L. Kingon spoke on unrealised factors in economic native development. He showed what profound changes had come about as a direct result of the use of certain implements, both of peace and war: the poisoned arrow and the assegai, the plough and the wagon, the primitive sledge contrasted with the railway, had each in turn exercised important effects in tribal life, and an axe had been the cause of a war. Mr. J. D. Marwick dealt with the important subject of the natives in the large towns. He uttered a warning regarding the growing tendency of the younger natives to form bands for the practice of crime and vice. Dr. C. T. Loram offered some practical suggestions for better provision for the medical needs of the natives; and two very interesting contributions were made by Mr. J. McLaren, one on Xosa arts and crafts, and the other on Xosa religious beliefs and superstitions. Of absorbing and unique interest was an account given by Dr. C. Pyper of the engraved (cup- and ring-marked) stones of the Lydenburg district in the North-Eastern Transvaal. Mr. W. Hammond Tooke discussed the problem of the Rhodesian ruins, and entered the lists against the views expressed on a former occasion by the Rev. S. S. Dornan. The latter gentleman also contributed a paper on the killing of the divine king in South Africa; the practice is founded on the belief that the potentate, in order to retain his divinity, must die a violent death as soon as senile decay sets in, lest the divine spirit should likewise suffer decay.

Before Section F, Mr. R. T. A. Innes initiated a discussion on the desirability of giving direct representation in the Upper House of the Union Legislature to education, agriculture, manufacture, mining, law, health, commerce, and finance. Purpose in education was discussed by Mr. H. C. Reeve; its ultimate aim should approximate towards the definite ideal of happiness for all. The demand for vocational training, so insistent of late, consequent on over-emphasising production, has revealed a lack of clear thinking, and the first need is, therefore, for leaders of thought to acquire definite views regarding education's ultimate aim.

On the first evening of the session, after the conclusion of the president's address in the Selborne Hall (see NATURE of September 19), Dr. Juritz presented to Mr. R. T. A. Innes, Union Astronomer, a cheque

for 50*l.* and the South Africa medal annually awarded in recognition of achievement and promise in connection with scientific research in South Africa.

The 1919 session of the association will be held at Kingwilliamstown, with the Rev. Dr. W. Flint as president.

REPORT OF THE SURVEY OF INDIA.

THE report issued by Col. Sir S. G. Burrard, the Surveyor-General of India, for the year 1916-17 includes a most satisfactory record of work accomplished in spite of a depleted staff and the difficulties involved by war exigencies. It is gratifying to observe how this Department has responded to the call of the war; the list of honours awarded to its members for distinguished service in the field is one of which any department might well be proud. Survey detachments have been sent to Mesopotamia, Western Persia (with the Russian forces), Persia (generally), Salonika, Waziristan (with the Field Force), and to the Makran border mission. Not a word is said about the work accomplished by these military parties, but quite enough is known, independently of the report, to justify the statement that they have well maintained the reputation of Indian surveyors in the field of military action. We shall hear all about them in time, though probably not from India. The normal work of the Department has been well sustained, especially in the topographical branches, where good progress towards the completion of the 1915 scheme is recorded. Broadly, this scheme embraced a re-survey of India (of which the topography was then nearly complete, but much out of date) on the scale of 1 in. per mile, with a subsequent very wise reservation in favour of $\frac{1}{2}$ in. per mile for certain extensive but unimportant areas of wilderness and jungle. The whole output for the year amounts to about 33,000 square miles (still leaving 1,350,000 to be completed) at an approximate cost of 31.4 rupees per square mile (say 2*l.*). Certain small areas of forest on scales of 3 in. and 4 in. per mile are included, so that this output of the twelve small parties employed must be considered very satisfactory. The geodetic operations include (besides direct triangulation and the magnetic surveys) pendulum, tidal, and levelling observations of great scientific value. More than one million maps have been turned out in the map department, including topographical, geographical, and general maps, amongst which are twelve sheets of the "one millionth" map of the world, which are now reduced to uniform style so as to take their place with similar sheets of the series published by the Royal Geographical Society and elsewhere. The colour system adopted by the Survey of India for defining differential altitudes in planes of different tints is not beyond criticism. The highest altitudes (next the regions of perpetual snow) are coloured a blood-red. The result when applied to Tibet is almost comic in its blazing determination to secure due recognition for the "Roof of the World."

T. H. H.

PHYSICS IN RELATION TO NATIONAL LIFE.¹

ABOUT one hundred years ago—in the year 1808—Dr. Thomas Young, one of the greatest of English physicists, published his "Lectures on Natural Philosophy." They had been delivered a short time

¹ From a lecture delivered on April 27 by Sir Richard Glazebrook, C.B., F.R.S., in a course on "Science and the Nation," arranged for science teachers by the London County Council Education Committee.