

deal of money, and in any case will not suffice in the tropics. Agriculturists in the tropics suffer from isolation, and, under isolation, education is even more necessary than it is under those conditions of closer contact and enlightenment that prevail in the developing countries of the north. Agricultural education in the tropics is almost a research problem in itself, and its solution is largely bound up in agricultural colleges with collateral work amongst societies, and in the secondary and elementary schools.

(From the Agricultural News.)

Reviews.

Annual report of the Department of Agriculture, Bombay, for 1920-21. The report for the year 1920-21 which has just been received, teems as usual with interesting details of the work of the department. There would appear to have been uniform progress in all branches of work. Two important lines of activity deserve special mention and are certainly worthy of emulation. One is a *scheme of fodder storage* to serve as a reserve against years of fodder scarcity. Two different plans were adopted. One was to buy grass when cheap, store in Dutch barns and keep it till it was saleable at a remunerative rate, though it was not to be kept for more than three years. An account of the financial side of the scheme as carried out in Upper Gujarat is promised during the coming year. The second system refers to the storage of shredded "kadbi" in a baled condition. This was started at Kopargaon, Ahmadnagar District after the famine year of 1912, as a result of which large quantities of straw (kadbi) have been made available in recent years of famine. In 1920-21 famine, 3,50,000 lbs. of straw was supplied in Ahmadnagar District.

The control of *famine cattle camps* is the other notable line of activity. Starving cattle are purchased in times of famine and are tended and cared for during the trying periods of scarcity and then resold. At Rahuri camp 1434 animals were purchased at Rs. 20 per head in February. They were sold in June at Rs. 41 each. There was a loss

of Rs. 277 in the transaction and this is attributed to underselling the animals. The cattle were fed mainly on cactus with 2 lbs. of cotton seed to balance the ration and 2 lbs. of grass to keep them from scouring. Though all the animals were sold out at a loss, the experiment serves to elucidate the importance of cactus as a famine food for cattle. "Cactus has no doubt proved its value in times of scarcity but the very laborious nature of work in preparing the cactus is much against its value as a fodder at any other period. Only young animals in fair condition thrive on cactus." The first line of activity is not in vogue in our presidency though the second was undertaken by the Deputy Director of Agriculture, Third Circle, Bellary, during the recent famine which visited the Bellary District. It may be taken up in the Ceded Districts.

The Plant Breeding Expert has been able to select strains from Kolamba rice which will give at least 33 per cent increased outturn. This is a great achievement and certainly redounds to the credit of the expert and the department. A Soil Physicist was appointed in December 1920 for Bombay and work commenced in 1921.

Much attention is being devoted towards cotton. The increased attention paid may be judged by the increase in the staff of the cotton section. One has been sent from Sind to the United States of America for special training and study of the selection and other methods of improvement in vogue there. The staff has also been reinforced by six gazetted officers, five of whom are diplomates in agriculture.

It may not be out of place to note that 18 out of 26 officers engaged in teaching are students who have passed out from the Agricultural Colleges and that out of 369 students who have passed out from the Poona Agricultural College, 38 have taken to private farming.

R. S. Rao.

The Weevil Fauna of South India.

Pusa Bulletin No. 125—1922 by Mr. T. V. Ramakrishna Ayyar, B. A.,
F. E. S., F. Z. S., Price Re. 1—4—0.

We acknowledge receipt from the Agricultural Research Institute, Pusa, of this valuable contribution to our knowledge of some of the

Insect Inhabitants of South India. The bulletin deals with the weevils—a class of beetles which are distinguished by the possession of a distinct snout. This family includes some very serious insect pests and the mention of the Rice weevil of stored Rice, the Red weevil of the Coconut Palm and the cotton stem weevil—all serious pests—is sufficient to indicate its importance. In all 190 species are listed in this paper—of which over 40 are of economic importance. Owing to the absence of sufficient literature and the absence of large reference collections, our knowledge of insects in general of India is in a nebulous condition and publications of the kind under review gather together all that is known of the particular group in India and form an invaluable help to further work. The bulletin is therefore to be welcomed and we would wish that more work of this sort would follow.

Notes and Extracts.

Paper from rubber. Researches which have been going on in London for sometime, point to the strong probability that newspapers will at no great distance of time be printed on paper produced from rubber, instead of on paper made from wood-pulp, as now. The results, says the *Manchester Guardian*, already derived are such that art paper of the kind used in the production of fashion journals and the big illustrated newspapers can be made from rubber. Further experiments are to be made with a view to making newsprint from the same material, and it is on this point, perhaps, that interest in the printing industry will centre. (West India Committee Circular, January 19, 1922.)

Selection of layers among poultry. It is very easy to fix upon the best layers at the end of the laying season. But Mr. Owen John after a few years of experimentation and investigation has been able to pitch upon some important characteristics in the pullet which are generally associated with prospective heavy producers. These characteristics, which are reproduced below, must therefore be of immense help to poultry breeders.