

But while we may well be grateful to the writer who has tried in this little book to make a very difficult subject somewhat less difficult, it must be confessed that the book is too condensed, too strenuously logical, and, moreover, too much occupied by questions of priority, to attract the general scientific reader, or, indeed, any but the professed student of its own subject. Prof. Roux has greater powers than are put in action here. Haeckel's "Generelle Morphologie" is now practically obsolete; but it marks an epoch in biological science, and it stands as a monument of clear thinking and lucid scientific expression. Let us hope that some day or other Prof. Roux will give us not only a vocabulary, not only isolated researches, however important, but will crown his labours by the writing of a newer and a better "Generelle Morphogenie."

D. W. T.

RUBBER AND RUBBER PLANTING.

Rubber and Rubber Planting. By Dr. R. H. Lock. Pp. xiii+245+x plates. (Cambridge: University Press, 1913.) Price 5s. net.

DR. R. H. LOCK was connected, until recently, with the Botanic Department at Peradeniya, Ceylon. In conjunction with other officers of that department, he conducted a series of very valuable experiments in connection with the tapping of rubber trees.

The book before us contains much that has already been published by the author officially in Ceylon. The diagrams and photographs illustrate many interesting features in connection with *Hevea*, *Manihot*, *Castilloa*, *Funtumia*, *Ficus*, and *Landolphia*, such as is rarely found in a book on rubber.

The book deals with the botanical sources and history of rubber, physiology of latex, the usual planting and harvesting operations, and the various pests and diseases of rubber plants. Each chapter is written in a very easy and popular style, and the subject-matter can be easily understood by the general reader.

The special line of work in the book is that which relates to tapping operations. When dealing with the effects of wounding the bark, the author lays stress upon the fact that any system of tapping which involves the cutting of the whole circumference of the tree at one time is bad. He suggests that in no circumstances should more than one-half of the total circumference of the tree be tapped at one time.

The yield of rubber bears a peculiar relation to the volume of bark on the tree. An instance is quoted of one tree which in three years yielded 240 lb. of dry rubber; the rubber was contained

in 70 gallons of latex, equivalent to 20,000 cubic inches. This yield of 20,000 cubic inches of latex was obtained by tapping an area of bark which had contained only 500 cubic inches of latex at the beginning of the experiment. The problem, therefore, resolves itself into one of the origin of the balance of 19,500 cubic inches of latex. The author concludes that the greater part of the latex can only have been produced by secretion of latex in the existing laticiferous tissue, thus suggesting that the latter is an organ for the actual manufacture, as well as storage, of the milky liquid.

It is common knowledge among experimenters in the tropics that the yielding capacity of rubber trees exhibits enormous variation. It is this variation which renders the majority of the public records of experiments valueless. Dr. Lock shows in certain experiments that the highest and lowest average yields for particular operations were respectively 106 and 8 cubic centimetres. The yield per unit of bark removed was in the ratio of 317 to 25—a variation of 1,000 per cent. in yields from trees which to the author appeared to be somewhat similar. In addition to this variation in yield, there is an equally marked variability in composition of the latex according to frequency of tapping, season of tapping, altitude, and so forth.

In the middle-East, the majority of planters tap the same area on the same day, or on alternate days, the intervals between successive tapping operations being regarded as sufficient to enable the latex to accumulate to the desired quantity and degree of concentration. Dr. Lock is probably the first experimenter who has continued experiments for a period of four years, and herein lies the great value of his work. The majority of tapping experiments have usually lasted a number of months, and on that account alone are apt to be highly misleading.

Dr. Lock concludes that, after 3½ years' continuous tapping, the yield from trees tapped once a week may become as great or greater than that from trees tapped at any shorter interval. It was this conclusion which gave rise to a controversy in the columns of the *India-rubber Journal*, which in turn led the Rubber Growers' Association in London to take up experimental tapping on various Eastern estates. Later publications from Malaya do not agree with the result obtained from Dr. Lock in Ceylon, but this might very well be due to the fact that the experiments in Malaya have not been continued for the same period of time.

Altogether, the book can be regarded as being of great value, not only to the practical man on the estate, but also to investigators in this country.

H. W.