Jagadis Bose introduces a new conception—that of 'physiological excitation.'

None of the older theories has been sufficient to explain all the facts and the extreme rapidity with which a stimulus is effective in *Mimosa pudica* and other sensitive plants: these, when not completely ignored, have always been a stumbling-block. It is therefore of interest that in the present work, Mimosa has been chosen for the subject of the fundamental experiments.

Briefly, Sir Jagadis Bose claims to have found that in Mimosa there exists a definite nervous system which he believes is in practically every way identical with that of the animal. He repeats on this plant most of the classical experiments on animal nerves and nerve-muscle preparations. By means of the most ingenious apparatus he identifies the phloem with the actual conducting tissue; he demonstrates the falling of the leaflets under various stimuli, the time between the application of the stimulus and the response varying with the distance of the leaflet from the point of excitation. He finds that the falling leaflets are confined to the stimulated side except when the stimulus (usually electrical) is intense, when the response travels up one side and down the other; this is taken as evidence for two unilateral conducting strands meeting at the apex of the leaf. The latent period and the rate of transmission of the stimulus have also been measured, and it is found that the phenomena of make-and-break electrical stimulation are the same as in animal tissues.

Mimosa was chosen for these experiments on account of its rapid and definite reactions, but this class of plant stands alone in the vegetable kingdom, and it is doubtful whether theories based entirely on such experiments as these could be applied to all plants. An electrical reaction corresponding to the action current of an animal nerve is said to have been demonstrated for several plants.

In view of the need of confirmatory evidence and of the hostile criticism which this work is likely to evoke from orthodox botanists, it is greatly to be regretted that the experimental conditions are not given in greater detail. We have no doubt that every reasonable precaution was used, but it is hard to reconcile the observation that temperature has a very definite effect on the rate of transmission with entire absence of any attempt to control it in other experiments. Apart from any effect on the plants, the conditions must surely have been very carefully controlled when dealing with such very sensitive apparatus; the reflecting galvanometer used in some of the experiments gave a deflexion of 1 mm. at a distance of 1 metre for a current of 10^{-10} amperes.

Sir Jagadis Bose is to be congratulated on the way in which he has treated the problems and on designing so many instruments for exact measurement. It is difficult to believe, however, that he will succeed in demonstrating in plants a central nervous system, the presence of which he seems to suspect.

Our Bookshelf

Citrus Diseases and their Control. By Prof. Howard S. Fawcett. With Sections on Oriental Citrus Diseases by H. Atherton Lee. (McGraw-Hill Publications in the Agricultural and Botanical Sciences.) Pp. xii + 582. (New York: McGraw-Hill Book Co., Inc.; London: McGraw-Hill Publishing Co., Ltd., 1926.) 25*s.* net.

A LARGE amount of valuable investigation has been carried out during the last twenty years on the etiology and control of citrus diseases in the main producing areas, but no book embracing the results of this work as a whole had been offered to the industry. This deficiency is very adequately met by Fawcett and Lee's volume.

The elder author's work, first in Florida and later in California, has established his name as that of the foremost citrus pathologist, and the book is necessarily, in no small measure, a record of his own investigations, adapted in a clear practical way to the needs of the California and Florida growers.

Lee's first-hand acquaintance with diseases in the Philippines and in parts of China and Japan, the recognition of those present in the Mediterranean region, Australia, South Africa, and the West Indies, and the extensive bibliography, make the work useful also to pathologists.

The arrangement of the matter follows customary lines, and the numerous illustrations are mostly from photographs showing the macroscopic characters of the lesions; many of the plates, in colour, appear strikingly true to Nature. In the treatment of the diseases definitely proved to be caused by parasites, enough is said, doubtless, of the micro-organisms concerned to satisfy the curiosity of the practical man. A number of new terms are proposed, with the view of furthering uniformity in the international nomenclature of plant diseases. These terms, like some which have already been gaining ground, such as gummosis, psorosis, and verrucosis, are based on some salient character of the lesion or gross appearance. The three terms mentioned indicate the difficulties involved: verrucosis is caused by a definite parasite; the cause of psorosis is unknown; gummosis may be due to a number of things, including five parasites at least, so the name of the parasite must be added to define the particular case (Pythiacystis *gummosis*, Diplodia *gummosis*, Botrytis *gummosis*, etc.). Among the rather strange-sounding new terms may be mentioned cancrosis for citrus canker and rubellosis for the pink disease of the tropics, both caused by specific parasites; foliocellosis (frenching or mottle-leaf), endoxerosis (internal decline of the lemon fruit), adustiosis (red blotch), and oleocellosis (oily spot) are non-parasitic diseases.