ers; Arc Control Devices; Isolation and Bus Selection; Methods of Circuit Breaker Operation; Interlocks; Switchgear Testing; Protective Devices on Switchgear; Instrument and Control Boards; Lightning Arresters; Fire Prevention and Protection; Oil-less Circuit Breakers. Each chapter is independent in itself and contains useful and up-to-date information on the topic selected. On account of the vastness of the field sought to be covered and the space limitations of a book of this size, rigid selection of the material is inevitable, but it can be confidently said that no material point has escaped notice. A comprehensive list of all relevant B.S.S. and a fairly representative bibliography on the subject given at the end of the volume, are useful additions.

S. KRISHNASWAMY.

Electrotechnics—*Journal of the Electrical Engineering Society,* Indian Institute of Science, Bangalore. Nos. 15 and 16, 1943.

We have received a copy of the current year's issue of this Journal. As the organ of the Electrical Engineering Society of the Indian Institute of Science, Bangalore, this Journal is known for the high standard of the articles published and we are glad to note that the issue under notice has maintained that standard. It contains thirteen well-thought-out articles of interest to the Electrical Engineering profession, mostly by Engineers with experience in the field they write upon. Editorial, Correspondence, Book Reviews, and News and Notes are among the other items.

It is a pity that no issue of this useful Journal could be brought out last year. We hope that its publication will go on uninterrupted from now on.

S. K. S.

The Carnivorous Plants. By Francis Ernest Lloyd. (Chronica Botanica Co., Waltham, Mass.; Calcutta: Messrs. Macmillan & Co., Ltd.), 1942. Pp. xvi + 352, 38 plates and 11 text-figures. Price $6.00.

The book under review, a monograph on the carnivorous plants, coming, as it does, from one who has devoted much valuable time in delving into the mysterious ways of the plants in question here, Prof. Francis Ernest Lloyd, Professor Emeritus in the McGill University, Canada, is an authoritative work, and its great usefulness to research workers in this field and to interested botanists in general must at once be recognised. Its appearance in print is most welcome, and Prof. Lloyd has spared no pains to make the account quite comprehensive and up-to-date.

Of the carnivorous plants, there are, excluding certain fungi, about 500 species representing fifteen genera of the flowering plants, and these fall into two groups, one under the Chloripetalæ, and the other under the Sympetalæ. Thus the peculiar and the very aberrant mode of nutrition exhibited by these plants must have been derived at least along two independent lines in the course of the phylogenetic history of the flowering plants.

The structural details exhibited by these plants and the exact mechanism involved in the capture and digestion of the prey are so many and so varied and complex, that it is hard to find one who could do justice to the subject other than the author himself. He classifies these plants into two major categories, the first where the traps are passive, with pitfalls, snares and fly-paper mechanism, and the second with active traps which display special movements necessary or contributory to the capture of the prey. In the different chapters of the book the carnivorous plants which come under these two groups are dealt with separately and in great detail.

In some, as in *Heliamphora, Darlingtonia and Pinguicula,* the digestion of the prey is brought about by bacteria contained in the pitcher fluids, whereas in a few others, as in *Sarracenia* and *Cephalotus*, the digestion is mainly due to the secretions from the glands, although bacteria may aid to a certain extent. In *Nepenthes* there are two enzymes—a catheptic and a tryptic—concerned in digestion, but there are also large numbers of bacteria in the pitcher fluid and these may only play a very secondary role.

After giving a resumé of the several interpretations regarding the morphology of the pitcher leaves in *Nepenthes*, Prof. Lloyd draws attention to the many interesting structural features of the pitchers and their role in ensnaring the unfortunate victims. And here it is interesting to refer to his observations. The insects walking on the lid of the pitchers run no risk of capture. "On the rim", however, it is supposed that they do. As a matter of fact, however, they do not, for they walk on it in any direction with rapidity, and they frequently stop to take the nectar from the marginal glands. They even passed underneath the rim and back several times in one excursion without danger. If, however, they venture on to the waxy zone they at once display a quite different behaviour. They cannot then by any chance move rapidly forward. If they progress at all, it is very slowly and with much groping with the legs as if searching for a hold. Usually this results in a complete loss of the foothold, and the ant falls into the abyss."

There are various associates which the pitchers harbour, and it is interesting to note that these constitute a "terrestrial fauna" above the level of the fluid, and an "aquatic fauna" in the fluid.

The eel-traps of *Genlisea* are remarkable for their structural complexities, and there is a good deal of speculation regarding the function of the glands here. They may secrete mucilage to facilitate passage of the prey down the trap, or they may secrete digestive enzymes, or both. Bacterial action may not, however, be completely excluded in digestion. In both *Dionœa* and *Aldrovanda* which display the steel-trap mechanism the mode of capture of the prey is essentially similar and digestion is due to the secretions by the glands found on the inner surfaces of the traps.

In the chapter on *Drosera*, the phenomenon of aggregation in stimulated tentacles is fully

dealt with and the cytological and physiological complexities involved in the process of digestion are discussed in detail. After reading through this chapter the reader is brought to the realization of the fact that the whole process of digestion in *Drosera* is not, contrary to what one learns from the usual accounts, a simple one. Prof. Lloyd points out the many-sided interest of this problem, and emphasises the need for further work in this promising field.

By far the most wonderful of the carnivorous plants is *Utricularia* belonging to the family Lentibulariaceæ. In this family we find examples of the simplest traps (*Pinguicula*), the most complex of the pitfall type (*Genlisea*), and the incomparable trap of *Utricularia* itself. Prof. Lloyd compares the trap of *Utricularia* to a mouse-trap, not the ordinary simple dead-fall one, but an elaborate, automatic, self-setting mouse-trap which catches as fast as the victims come, and which is provided also with a disposal plant so that nothing is left at last but hair and bones, the trap working in any position and even under water. This analogy may be rather far-fetched, but as Prof. Lloyd remarks, it at least serves to indicate that the *Utricularia* trap is a pretty complex bit of mechanism.

While ordinary accounts of the carnivorous plants do not include the fungi which prey on animalcules, a chapter in the present book is devoted to the zoophagus fungi. It is interesting to read how uncanny these fungi are and what diabolical methods they employ in capturing their victims.

The origin and evolution of the carnivorous plants are some of the interesting questions that arise in the minds of interested readers, but unfortunately little can be said in answer to them, and as Prof. Lloyd says, how these specialised organs of capture in these plants could have evolved defies our present knowledge.

All students of botany interested in this subject will be sure to have nothing but praise for the book, and gratitude to the author for making his extensive and intimate knowledge of these plants available to a very large circle of readers. Throughout the book the language is simple and lucid, and the style thoroughly enjoyable. The book is profusely illustrated with numerous photographic reproductions and excellent line drawings, many of them prepared by Prof. Lloyd himself. The usefulness of the book is further enhanced by the incorporation under different chapters of all the original and up-to-date literature in this field.

The get-up of the book leaves nothing to be desired, and the price is quite modest. Considering the present difficulties due to war, the publishers deserve our warmest congratulations for bringing out this volume, the ninth in the new series of plant science books under the editorship of Dr. Frans Verdoorn. This book is an outstanding contribution to botanical science by Prof. Lloyd and ought to find an important place in every botanical and general science library. S. B. KAUSIK.

Indian Village Health. By J. N. Norman-Walker. (Oxford University Press, Madras), 1943. Pp. 90. Price Rs. 2-8-0.

In this small book, the author has made an attempt to deal with most of the important health problems affecting Indian village life. General principles in the handling of the common Communicable Diseases have been dealt with. Local experience seems to have unduly influenced some of the observations of the author and several of the detailed recommendations under Malaria, Small-pox, Water and Milk have been superseded by more up-to-date practices.

The absence of stress on the importance of grain movements as a major source of spread of plague and the necessity for early diagnosis of cases of Tuberculosis are serious omissions. The use of copper-sulphate for destroying harmful organisms in water is limited to the prevention of objectionable algæl growths only.

The brief notes given under Appendix is helpful for the field worker in Public Health. The few model plans included at the end of the book, are useful in designing construction of public utility. B. ANANTHASWAMY RAO.

An Introduction to Historical Plant Geogrphy. By E. V. Wulff. (Waltham, Mass.: The Chronica Botanica Co.; Calcutta: Macmillan & Co., Ltd.), 1943. Pp. 223. Price $4.75.

The book gives a fascinating account of the History of Plant Geography. As is usual with the Chronica Botanica publication series, the book is written by an acknowledged authority and includes most of the works of the author himself. The entire work is divided into eleven chapters and embraces all aspects of plant geography. It will be noticed that every advance in the field of Botany has some bearing or the other on the study of plant geography.

It is not possible within this short space even to review the wealth of facts presented in the book. But a very brief account of the subjects treated therein might not be out of place. But one must certainly go through the accounts given in the book to get a proper perspective of the importance of the study of plant geography.

The region of distribution of any taxonomic unit which is termed an area, might be natural, or artificial by intentional or accidental introduction by man. The topography which is affected by physico-geographical conditions is often made difficult to be comprehended on account of inherent peculiarities of the plants themselves. Some are stenothermic (growing within certain restricted temperatures), others require mycorrhiza for their growth or even a particular type of insect visitors. The latter forms are usually termed stenotopic.

Regarding areas and their distribution, a detailed account of the present status of the "age and area" hypothesis is given. It is well known that the centre of an area for a parti-