

istry, like physics, finally set out on its course of being reduced to a department of mathematics"; and at least one reader sees no reason to revise his opinion that, apart from a few exceptional men like Petrus Peregrinus and Theodoric of Freiberg, the medieval thinkers entirely misconceived, as had the Greeks before them, the true nature of experiment. The absence of detailed accounts of the disposal of apparatus and of the control of the sources of error seems to me sufficient proof that it was regarded merely as a means of verification, in striking contrast to, say, Newton's first letter on the "celebrated phenomena of colours". But if here and there Dr. Crombie's enthusiasm may have outrun his discretion, his book is one which will set a standard for a long time to come. Its publication has removed for ever any excuse there may have been for ignorance of medieval scientific thought.

W. P. D. WIGHTMAN

## GRASSLAND CULTIVATION IN BRITAIN

### The Grass Crop

Its Development, Use and Maintenance. By Dr. William Davies. (Agricultural Series.) Pp. xiii+318+9 plates. (London: E. and F. N. Spon, Ltd., 1952.) 26s. net.

THE development, use and maintenance of grassland in Britain is a matter of vital national importance—an importance which is becoming more apparent with each pronouncement concerning the national economic position. Faced with the imperative necessity of increasing agricultural production, it is to the grassland that one must look in the main for greater supplies of meat, milk and dairy produce. What is more, grassland represents a vital factor in maintaining soil fertility as well as a means of actually building up fertility, thereby raising the level of corn and root-crop production which is so essential to survival.

The potential of production from grassland rightly cultivated is immense, and the picture is most ably portrayed by Dr. William Davies in his new book, "The Grass Crop", for he himself has been concerned with this crop both in the sphere of research as well as advisory work among farmers for more than thirty years. Allied to his own work on the subject, Dr. Davies, as director of the Grassland Research Station, is in close contact with all the problems of the subject and has widened his canvas by first-hand study in many countries abroad. As a result he has been able to present not only a skilful, scholarly treatise of the subject but also one which will have lasting value to farmers and students alike.

In the early chapters, the historical and ecological aspects of grassland are presented, and Dr. Davies has been successful in weaving into this section much of the philosophy of modern grassland farming. As he so rightly points out, grassland agronomy must have an ecological approach but one not confined to plant ecology, for due heed must be given to both the animal consuming the herbage and the soils producing it. There is, too, the complicating factor of climate which determines the growth of the crop as well as the manner in which it shall be used by the farmer. Thus, the approach to the subject has very wisely been that of the trinity of soil, sward and animal.

Advocacy of the ley system of farming is emphatic and well reasoned, and the target is set at twelve million acres while at the same time retaining the present acreage of field-crops in Britain. The achievement of this goal would enable the sheep population to be doubled and the cattle population increased by more than a third above the 1951 level. But what is more, the attainment of such standards would act as a stimulant to the whole of the agricultural industry. One has only to travel through those counties where the ley is regarded as the pivot of the rotation to realize the salutary effect upon crop production as a whole of the securing of first-class leys.

To accept the principles of ley farming is one thing—to put them into operation is vastly more difficult. So Dr. Davies gives skilled attention to the vital problems of choice of seeds mixture, the establishment of the ley and the influence of the grazing animal on the productivity of the ley as such. A chapter is devoted to a detailed description of the characteristics and agricultural value of the different species and strains of grasses and clovers, and there are chapters on lucerne and the controversial subject of herbs. Seed production, which offers not only a useful additional source of income for many British farmers but is also of vital economic consequence traditionally, rightly merits a special chapter. Particularly valuable are the chapters dealing with permanent grassland and the development of the marginal and hill lands of the country, for it is here that the untapped potential lies and where criticism can so rightly be directed at the conditions found to-day.

The book is completed with an excellent detailed bibliography, covering all aspects of the subject, and also a useful index. It is to be hoped it will have the wide reading public it so richly merits, for apart from the farmers and students for whom it is specifically written, all with an interest in British farmlands, be they geographers, historians or simply lovers of the countryside, will find fascinating and really worthwhile reading in its pages.

H. IAN MOORE

## ORGANIC CHEMISTRY FOR THE HONOURS STUDENT

### Organic Chemistry

By Prof. E. E. Turner and Dr. Margaret M. Harris. Pp. xi+904. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1952.) 50s. net.

THE writing of a single-volume treatise on organic chemistry inevitably calls for compromise among the rival claims on space arising from a multitude of interests. A purely objective approach is difficult or impossible to maintain, and text-books tend to differ as much in range and emphasis as in arrangement and style. The present authors recognize this: they do not conceal their particular interests, but rather give them prominence in an adequately broad setting. The emphasis is on stereochemistry, and with this deservedly major theme there is interwoven a systematic survey of organic compounds, lavishly illustrated by structural formulae and enlivened by frequent discussion of reaction mechanisms.

To accommodate the beginner, the first chapter provides a general introduction and sets forth essential features of electrochemical theory. Thereafter the general subject is rationally developed on modern lines, but without neglect of the origin and evolution