

The reader is thus prepared for generalized representations of colour patterns, and for unfamiliar shades seen in special lights. The test is severe, however, as the bird rendered static on paper becomes too readily comparable with the close-up appearance to which one is accustomed. So, while the method partly succeeds, the effect sometimes seems too strange to be credible. The difficulty is less with the black and white drawings which form the majority, as one's attention is focused on the movement which the pose has caught. The result is often beautiful and life-like. Captain Kelly has clearly a real feeling for his subjects: his work is evocative of pleasant memories and stimulating to fresh observation.

#### Chromosomenbau

Von Prof. Lothar Geitler. (Protoplasma-Monographien, Band 14.) Pp. vii+190. (Berlin: Gebrüder Borntraeger, 1938.) 15 gold marks.

**T**HIS competent and up-to-date monograph on the morphology and behaviour of chromosomes provides an outline of the structure of the chromosome in plants and animals, based on recent work. After describing the external morphology of the chromosome the author discusses euchromatin and heterochromatin, the formation of spirals, chromomeres, the salivary gland chromosomes of Diptera, and the physico-chemical nature of chromatin. A comprehensive bibliography is given, while the illustrations are excellent.

This well-illustrated monograph can be highly recommended.  
F. W. S.

### Chemistry

#### Laboratory Technique in Organic Chemistry

By Prof. Avery Adrian Morton. (International Chemical Series.) Pp. x+261. (New York and London: McGraw-Hill Book Co., Inc., 1938.) 15s.

**T**HERE are so many books on this subject that the publication of still another makes the reader wonder whether it should be a welcomed addition to those already in print or whether it should be regarded as redundant.

The answer in this case is clearly the former, because the book is not quite like anything that has appeared hitherto. Few books provide guidance in both the inorganic and the organic laboratories, and if one is asked is it altogether desirable that this should be so, the answer must be that circumstances alone can determine the needs of the moment. Certain it is that if one were to possess and to use all the knowledge in this book, he might be regarded as almost one of the universalists, the days of whom are said to have ceased with Odling. The changes which have taken place during the last forty years are really amazing, for if the number of types of apparatus required for research purposes at the present moment are compared with those needed in 1900, it is clear that in those days the manipulator had to rely mainly on his own skill in order to form the kinds of appliance he required. Now the manufacturers reproduce in a very short time any special

form of apparatus details of which may have been provided by an investigator, and it is ready for use at comparatively small cost, by anyone who may wish to adopt it for some purpose of his own. The American practice of using the names of describers to denote any variations in types of apparatus is used freely in this book. It is an open question whether this is desirable or not, but in Great Britain it is generally regarded as invidious, because the work leading to the elaboration of any special type is so often the outcome of team work. Nevertheless, perhaps in several instances cited in this book the inventor's name should be associated with his creation. It will suffice to mention two cases of the kind which stand out from the others, namely, the amazing apparatus of Doran on page 92 and that of Quiggle, Fenske and Tongberg on page 54.

The book is a good one, and is to be highly commended to those who want a general treatise on modern chemical technique and all that that implies.

J. F. T.

#### Grundzüge der Theorie ungesättigter und aromatischer Verbindungen

Von Prof. Dr. Erich Hückel. Pp. 160. (Berlin: Verlag Chemie, G.m.b.H., 1938.) 6 gold marks.

**T**HE appearance of pamphlets such as the one under review indicates, if any indication were needed, the necessity for students of chemistry, and particularly of organic chemistry, of possessing a working knowledge of German. The Germans write these short monographs so well, and the German publishers seem to like publishing them, although the profit must be small. In Great Britain there is a need for similar publications, but their sale is restricted by the fact that senior students (third year) rely nowadays almost entirely on their lecture notes.

The monographs, therefore, find their greatest use among the lecturers themselves and among the research workers who happen either to be personally interested or among those who wish to be kept fully up to date in the advance of organic chemistry. In these directions the monographs do great good, and in the present example the subject dealt with is one which may be said to be in the forefront of organic chemical discussions at the present time.

The saturated carbon atom, that is to say, one which has all its combining capacity satisfied or practically satisfied, is of less interest than the unsaturated atom in which such combining capacity is not satisfied. The discovery of Thomsen that the double bond in ethylene did not represent two single bonds gave an impetus to research in unsaturated carbon compounds which has led to fruitful work during the twentieth century. The cause of the striking differences shown by unsaturated compounds and those belonging to the 'aromatic' series is still the question of hypothesis and awaits the advent of an all-pervading theory. It is this field of organic chemistry that has been chosen to supply the substances used by Nature for the purposes of animal and vegetable metabolism, and there can be no