are given for the determination of fluorine in urine, teeth and bones, blood and soft tissues, agricultural samples and water (38 references).

The earlier pages of the chapter on sulphur contain notes on a large number of published methods for the separation and determination of inorganic and organic sulphur. Among methods which receive some detailed consideration are the methylene blue method based on the reaction of sulphide with p-aminodimethylaniline in the presence of ferric chloride, and the barium sulphate turbidimetric method. Procedures described in detail include determinations of hydrogen sulphide in gases, of free sulphur in air and in hydrocarbons, of sulphate by benzidine precipitation and diazotization, of sulphur in plants, wool and soils, of sulphides in water and alkalis, and of aliphatic sulphides in hydrocarbons by ultra-violet absorption after reaction with iodine (132 references).

A brief summary of the general chemistry of tellurium and selenium precedes the sections on separations and methods. Following a review, comprising notes on published work, the absorptiometric methods described are based on the formation of iodotellurite, of addition compounds with sulphuric acid, of a compound with diaminobenzidine, and of the tellurium thiourea complex. A colorimetric iodine method for selenium is included. Procedures are given for the determination of selenium in natural waters, copper, steel and arsenic, and of tellurium in lead and copper (46 references).

The chapter on boron commences with notes on precautions, such as avoidance of contamination and loss. Separations are based on distillation as methyl borate, preferably in the cyclic apparatus illustrated. Reactions with quinalizarin, carminic acid, dianthramide or curcumin are used for the actual determinations. Procedures for the determination of boron in steel and alloy steels are given (22 references).

The book contains much very useful information : in general, the treatment is thorough and the choice of methods good.   C. O. HARVEY

THE BILE SOLID

Cholesterol
Chemistry, Biochemistry, and Pathology. Edited by Robert P. Cook. Pp. xii + 542. (New York : Academic Press, Inc. ; London : Academic Books, Ltd., 1958.) 15 dollars.

DR. R. P. COOK must have wondered whether a book of this title could be usefully compiled. He need not have worried : he and his team have done well. The work he has edited is a comprehensive survey of most important work (to the end of 1957) on cholesterol ; it includes much material on other sterols and more than a little on steroids in general.

A short historical introduction, appropriately written by Henrik Dam, is followed by a thorough, if condensed, chemical survey by Peter Bladon. This includes sections on nomenclature, on physicochemical measurements on steroids, on digitonide and other complex formation and on colour reactions. There are tables of natural sterols, and of physical constants (melting points, optical rotations and ultra-violet spectra) of cholesterol derivatives.

R. P. Cook and J. B. M. Rattray then give a chapter on methods of isolation and estimation of sterols ; R. P. Cook describes their distribution in organisms and plant and animal tissues. G. S. Boyd and M. F. Oliver discuss the physiology of blood cholesterol and of lipoproteins in man and other species. R. G. Gould thoroughly reviews our knowledge of sterol biosynthesis, and O. Hechter the conversion of cholesterol to steroid hormones. Geoffrey Bourne contributes a thoughtful and provocative essay on the histological demonstration of cholesterol and on its possible functions in cells. Metabolism in the normal animal is dealt with by R. G. Gould and R. P. Cook, and David Adlersberg and Harry Sobotka discuss pathology. The important and highly topical subject of treatment of disorders of cholesterol metabolism is briefly reviewed by I. H. Page. W. Bergmann contributes a chapter on evolution and sterol distribution, Marjorie Horning discusses sterol requirements of insects and protozoa, and Thressa Stadtman writes about microbial metabolism of steroids.

The book ends with R. P. Cook's account of metabolic relationships between cholesterol and other lipids, and there is an appendix on practical methods of extraction, purification and estimation of sterols and lipoproteins.

The book is thoroughly documented throughout, and it has an adequate index. Its format and illustrations are excellent.

More than all this, it is, for the most part, well and clearly written. Dr. Cook has clearly been a tactful and liberal editor ; moreover, he and his collaborators have somehow conveyed a sense of history and of the broad sweep of biochemical advance into a work that might easily have been a dry and dull collection of data.

All interested in its subject-matter will want to have and, having, will want to read this admirable volume.
                    G. A. D. HASLEWOOD

STABILITY OF NON-LINEAR SYSTEMS

Differential Equations
Geometric Theory. By Solomon Lefschetz. (Pure and Applied Mathematics : a Series of Texts and Monographs, Vol. 6.) Pp. x + 264. (New York : Interscience Publishers, Inc. ; London : Interscience Publishers, Ltd., 1957.) 9.50 dollars.

A STANDARD set of differential equations can be taken in the form :

$$dx/dt = X(x,t)$$

where x, X are n-dimensional vectors, t can be thought of as the time, and a solution $x(t)$ is a curve, or trajectory, in the n-space. This formulation shows the need for some matrix technique and some knowledge of simple topological concepts. The important idea of stability then appears in the statement that a trajectory from a given initial point is stable if, roughly speaking, another trajectory starting from a neighbouring initial point nowhere departs substantially from the former.

After introductory chapters on existence theorems and linear systems, Lefschetz defines various types