

REVIEWS

The Tools of the Chemist. By Ernest Child. (Reinhold Publishing Corporation, New York; Chapman & Hall, London), 1940. Pp. 220. Price 21*sh.*

This book outlines a branch of historical research which has not hitherto received adequate attention. It is a very successful attempt to trace the birth and growth of the chemical apparatus industry in the United States.

Students of eighteenth and early nineteenth century chemistry must always feel amazement at the skill and ingenuity with which its exponents devised and utilised appliances which appear so clumsy to us; but it is doubtful whether this emotion has engendered an appropriate gratitude towards the modern apparatus-producer. Among a hundred chemists able to describe the researches of Gay-Lussac, how many are aware that he founded with Collardeau a firm for manufacturing the apparatus he invented? How many could focus Frederick Accum, one of the early dealers in apparatus, who designed and improved philosophical "glasses", and emulated Sir Humphry Davy as a chemistry propagandist? Yet our obligation to the mute, inglorious glass-blower is incalculable.

Mr. Child's book is in three parts, namely, People and events in American Chemistry, Ancestry and development of American chemical apparatus, and Distributors of laboratory apparatus. Upwards of 100 illustrations including portraits enliven the pages, and the enterprise, which must have involved enormous labour here condensed within a narrow compass is timely because each year now unhappily removes diminishing survivors from the more secluded fields of inquiry. It assembles an extended series of events which blend into a most interesting picture; but many of which, being individually unimpressive, might otherwise have been submerged in the course of twenty years.

The Massachusetts Historical Society possesses an invoice dated March 1633, recording import of apparatus and chemicals by John Winthrop, Jr., who set up the first laboratory in the United States. He was the eldest son of the famous pilgrim father who reached Salem, Mass., in June 1630, having

been appointed the first governor of the colony in the previous October; the name of their home in England, Groton, lives in five New England States, and in the famous 56-year old American preparatory school which claims sixteen Roosevelts among its old boys. Winthrop's London supplier was Kirby, following whom after nearly two centuries was Accum, who from 1802 supplied Benjamin Silliman, chemistry professor at Yale. Then came Griffin, and Mr. Child reproduces a curious illustration of the billposting art as practised in 1837, advertising "Griffin's Bazaar", established in 1826. The cradle of the indigenous American laboratory-apparatus trade, however, was Philadelphia, because that city claims the first chair of chemistry (University of Pennsylvania) and the first American college of pharmacy.

Treatment of the title-subject, and the preliminary biographical survey of chemistry in the United States are very informative, and the book deserves a place in every science library. The printing, and the reproduction of illustrations are admirable. Having discovered a gap in the history of chemistry, Mr. Child has filled it most adroitly.

M. O. F.

Aircraft Engines—Vol. I. By A. W. Judge. (Chapman & Hall, Ltd., London), 1940. Pp. 380; Figs. 226. Price 15*sh.*

This book is written by a well-known writer on internal combustion engines. The information is collected from a large number of research publications on the subject and as such the book constitutes a valuable survey of the latest information available in the field. The first part of the volume contains a very interesting account, in the light of recent knowledge of the physical and chemical processes which contribute to the efficiency and output of modern engines. Combustion chamber design, turbulence, compression ratio, rate of flame travel, detonation are all expressions which arrest the attention and on which engineers are always seeking for more enlightenment. The astonishing strides made in the output per litre in recent years makes fascinating reading. Yet the author makes no attempt at going into theoretical or design details but

explains briefly and clearly general principles with a view to clarifying their practical application. Within the scope of the book, which is expected to fill in the gap between the elementary and the more advanced books on the subject, the author has very well succeeded in conveying, with the aid of a large number of diagrams, graphs and worked-out examples, the practical aspect of the working and operation of the aircraft engine. At several places he has included useful experimental data which will not only help the reader to understand the subject but will stand him in good stead in actual practice.

The present volume which is the first part of the work does not cover the whole subject, important information concerning different types of engines, their accessories, lubricating systems, etc., which does not appear in this volume will be added in the second part.

The book has appeared at a time when its subject has assumed great importance. We are sure the book will be a valuable help and guide to many technical men, students and engineers who are particularly interested in the subject.

K. ASTON.

The Calculation and Design of Electrical Apparatus. By W. Wilson. (Chapman & Hall, Ltd., London), 1940. Pp. 230; 24 diagrams. Price 16sh. 6d.

This is the second edition of a book whose author is well known as an authority on switch and control gear. Its first edition appeared in 1934 and fulfilled a long-felt need for a book dealing with the general principles of the design of a variety of apparatus such as electromagnets, solenoids, field windings, resistors, circuit breaker parts, etc., which are not generally found in books on design. The average electrical engineer has generally no occasion to design heavy electrical machinery such as generators and transformers, but will frequently have to design a resistor or issue specifications for a circuit breaker. For the average engineer therefore the book is almost indispensable.

The second edition incorporates many changes which have brought the book up to date. Most of the elementary matter has been omitted without sacrificing the clarity of the fundamental principles, and a good deal of additional information of a recent

nature has been included. The greater part of the changes has been embodied within the first five chapters. The first chapter contains formulæ for the design of liquid earthing resistors. The discussion on 'sudden heating' in the second chapter is very helpful in estimating quickly the maximum temperature rise of electrical apparatus. The third chapter on 'Forces due to electric currents' gives a very clear insight into the principles involved in the mechanical design of bus bars, switch contacts, cross bars of switches, etc. In the fifth chapter due importance has been given to modern short circuit testing. Although this subject is somewhat involved, the intimate association of the author with one of the new testing stations has enabled him to present the subject in a very simple manner. An illustrative example has been fully worked out taking a twelve element oscillogram. In view of the rather advanced nature of this subject, it would appear more logical to place the fifth chapter and the eighth chapter dealing with 'Calculation of heavy conductors' together at the end of the book.

The book abounds in numerous tables of useful data and worked examples. A set of further examples with answers has been added at the end of each chapter.

From all points of view the book will be a useful addition to one's technical library.

K. ASTON.

Thermodynamics for Chemical Engineers. By H. C. Weber. (Chapman & Hall, London; John Wiley & Sons, New York), 1939. Pp. vi + 264. Price 19sh. 6d.

The laws of thermodynamics are distinguished by the fact that they are based largely on experience. What then is more natural than to expect a wide range of utility for these laws in the practical problems of engineering? These laws have further the merit that they involve no special assumptions regarding the structure of matter or mechanism of process, and require but a few co-ordinates which can, in general, be directly measured for a description of the system or process. Thermodynamics is hence an invaluable tool for the chemical engineer for predicting the properties of his materials, and for ascertaining the driving energy required for the several unit operations.

The pure chemist is largely concerned with analysis in terms of free energy and the

engineer, particularly the mechanical engineer with entropy concepts; but the chemical engineer must be familiar with both. The book under review is divided into 20 convenient chapters, each with a summary and a set of problem exercises. These latter form a significant feature of the book and bring home very clearly the practical utility of thermodynamic considerations. The subject-matter is neatly arranged in what may be called, in the language of the chemical engineer, a didactic 'flow relationship'. The chapters on fluid flow, steam engines and turbines are concise and clear. Such studies as these have in no small degree contributed to the high efficiency of modern industrial equipments.

The reviewer has little to suggest by way of criticism excepting that Chapter XIX on 'Electrochemical effects' could be amplified to advantage. The book can be strongly recommended to all students of chemical engineering and industrial chemistry.

M. A. GOVINDA RAU.

Thermodynamics and Chemistry. By F. H. Macdougall. Third edition. (John Wiley & Sons, New York; Chapman & Hall, London), 1939. Pp. viii + 491. Price 30*sh.*

This is an American publication, and is intended for advanced students. Every topic in chemistry in which thermodynamics finds an application has been dealt with in this book. In a chapter on "Mathematical apparatus" the author gives a brief treatment of line integrals and emphasizes the distinction between exact and inexact linear differential expressions. Reversible and irreversible reactions are concisely but lucidly dealt with. A very clear account of entropy and a statistical interpretation of the same are also included. Besides a discussion of fugacity, activity coefficient and the theory of strong electrolytes, there is a chapter dealing with gravitational, centrifugal and electric fields and surface tension. In the chapter dealing with the third law of thermodynamics the recent methods of calculating thermodynamic functions with the aid of quantum statistical mechanics are also introduced, stressing the fact that the results obtained by these methods furnish a check on the validity and proper interpretation of the third law. Every chapter contains problems to be worked out by the students.

The book is a comprehensive summary of the applications of thermodynamics to chemical problems and contains a very large number of thermodynamical equations covering a very wide field. As a text-book for students preparing for an examination it can certainly be recommended. It is essentially a book on thermodynamics as applied to physical chemistry. It is not a book on physical chemistry treated thermodynamically; perhaps it was never intended to be.

M. R. N.

Electrocapillarity. By J. A. V. Butler. (Methuen & Co., Ltd., London), 1940. Pp. 208. Price 12*s.* 6*d.* net.

The book, as the author writes in the preface, "deals with potential differences at electrified interface, the origin and nature of the effects that arise therefrom, and with electrode equilibria and kinetics". Although limited in its scope, it touches upon subjects which are not dealt with in a single book. The value of the book is further enhanced by the fact that the author has himself made valuable contributions to the subject. The book opens with a chapter on the seat of the electromotive force in the galvanic cell, which contains a short historical account of the earlier work and views. This is followed by chapters on Thermodynamics of electrode potentials, the mechanism of a reversible electrode potential, electrode double layers, electro-kinetic phenomena, overvoltage, concentration polarisation and some electrode processes. The apparatus of Svedberg and Tiselius for determining cataphoretic mobility, which has been improved and used with great success by Tiselius in the study of the mobilities of proteins has been described in some detail in the chapter on electro-kinetic phenomena. The theories of overvoltage and the passivity of metals are also fully discussed. Each chapter is an excellent summary of the recent work and contains references to original sources. The book is strongly recommended to those who want to obtain an up-to-date account of the Chemistry and Physics of electrode and other charged surfaces in a concise form. Students of Physics and Chemistry working for their degree examinations in the pass and honours course will derive a good deal of benefit from its study. It will also be

greatly valued by the workers in the various fields covered by it. The book is well printed.

M. QURESHI.

Introductory College Chemistry. By Neil R. Gordon and William E. Trout Jr. Second Edition. (John Wiley & Sons, New York; Chapman & Hall, Ltd., London), 1940. Pp. xiii + 753. Price 21sh.

This is an American publication, and as is characteristic of the origin, contains matter and method of presentation which will be appreciated by all teachers of chemistry. After an introductory chapter on manipulations, metric system and use of the balance, the author starts with water for physical and chemical studies, from which oxygen and hydrogen follow naturally. Properties of gases and fundamental laws of chemistry are treated next, then the atmosphere which leads to the study of nitrogen and its compounds. After this come acids, bases and salts. Theories of ionization are presented quite early, so also laws of mass action and equilibrium. Oxygen-sulphur family claims precedence over the halogens. After the classification of elements carbon and nitrogen families are discussed.

Part II deals with metals, the order followed being analytical groupings: alkalis, alkaline earths, the ammonium sulphide group, the hydrogen sulphide group and the HCl group. The last chapter deals with elements not covered in the previous sections, *e.g.*, the rare earths, the titanium family, vanadium and the inert gases.

Experiments which the students themselves may perform are interspersed throughout. Diagrams of industrial processes and photographic reproductions of factories are other features, as also photographs of eminent chemists. Being a modern book, the structure of atoms and nuclei and the concept of valency from the electronic point of view are all discussed. Reduction, for example, is "electronisation", and oxidation is to be termed "de-electronization".

The book aims at a new approach to the study of chemistry and is based upon what is called the "project method" of instruction. Many of the "tabloid" facts of chemistry as described in ordinary text-books are replaced by experiments which the student himself performs, and by means of questions and incomplete equations to be answered and completed by him, he is led on from the

familiar to the less familiar chemical reactions. The student is provoked to think for himself and otherwise trained to depend upon himself and to do his own study without much extraneous help.

This is an admirable plan. But the reviewer doubts if it can be adopted in any school or college in India, firstly due to red-tapism which will not permit of any educational experiment in an isolated institution even with an enterprising teacher, secondly due to the paucity of proper teachers—It may be a paradox but nevertheless true that the success of this project method by which the student is trained to do his own study without extraneous help depends very much on the teacher—Then there is the time factor. The method may not permit of so much time to be devoted to only one of the many subjects which a student has to learn for his examinations.

The book can be recommended to Intermediate students. As extra reading it can be read with profit by senior students also. All teachers will find the book very helpful in teaching chemistry and they should be familiar with the new method of instruction.

M. R. N.

Elementary Crystallography. By John W. Evans and George M. Davies. Second edition. (Thomas Murby & Co., London), 1940. Pp. 149. Price 6sh. 6d.

This is the second edition of a well-written elementary text-book on Crystallography, first published in February 1924. The present edition remains practically the same as the first, with a chapter on X-rays now added on.

It consists of sixteen chapters,—the first three are devoted to a study of the nature of crystals, their symmetry and their axial characters; the fourth and the fifth deal with the systems of notation, the zonal characters of crystals, the goniometers, some simple calculations and crystal projections; in chapters 6–13 are described all the holohedral forms of the six systems, with, in two cases, the cubic and the hexagonal, also the hemihedrons; and in chapters 14–16 are taken up the study of twins, the thirty-two classes of symmetry and the investigation of crystals by X-ray.

In the Indian Universities, where crystallography is taught as a minor part of the syllabus in Geology, it may be difficult to

use this book exclusively as an elementary text-book on the subject. The introduction in the first chapter, of the Space-lattice theory, for the definition of a crystal; the free use in the second chapter, of hemihedral form-names like Trigonal Pyramids and Trapezohedra for illustrating the symmetry of Quartz; and the enumeration in the same chapter of the thirty-two classes of symmetry; and the introduction in the third chapter, of the Weiss-Miller controversy for the indexing of the lateral axes, are sufficient surprises for a student of the Intermediate to take kindly to the rest of the book. On the other hand, a student going up for the B.Sc. Pass Degree in Geology, finds early chapters like four and five dealing with Zonal relationships, the Zone-control equation, the rule of three-faces in a zone, the reflecting goniometers (the two-circle included), and the Stereographic and Gnomonic projections,—all of which are not in his syllabus. He will, however, find chapters 6–16 easily readable,—the forms of the several systems are described on symmetry considerations, their axial characters clearly enumerated and the several faces of the individual forms described in elaborate lists, embodying appropriate algebraic signs. Yet the student will find, in the treatment of the subject, some departure from other writers of elementary text-books on Crystallography, like Bayley and Williams. The Hemihedrons of the Cubic and the Hexagonal systems alone are described; and they are described on symmetry considerations, while other writers derive first, the kinds of hemihedrism on the geometrical theory, and thereafter describe the forms. The treatment of twinning into several kinds, is again based on the presence or absence of certain elements of symmetry, whereas other writers treat them on geometrical considerations. The last two chapters on the thirty-two classes of symmetry and X-ray study of crystals give a very concise and clear account; they afford excellent reading.

The authors have throughout the book kept the symmetry treatment prominent, and have endeavoured to give to the modestly ambitious scholar, geologist, physicist or chemist, the latest and most accurate knowledge of the subject consistent with a simple treatment. When they define parameters "as units of measurement on the different axes", and indices as "parameters divided by

intercepts", we are encountering definitions different from the familiar ones. Again, when we notice their regret that in the Monoclinic system, it is now too late to substitute the ortho-axis for the c-axis, and the terms acute and obtuse for positive and negative hemi-pyramids respectively, or, their teaching, that in the triclinic system, each mineral has its conventional crystal-setting, we are mildly reminded of a slightly advanced knowledge.

The Honours student in India might be tempted to look into chapters four, five, fifteen and sixteen for a preliminary account of some of the material he is interested in, but, as the authors themselves remark, he would prefer to take up, even for a first reading, the well-known treatises of Mr. T. V. Barker, Professor Lewis and Doctor Tutton.

For a lecturer in Crystallography to the Intermediate and the Pass Degree in India, who is not a specialist, here is a brilliant Revision text-book from Doctor Evans and his colleague, which has the same relationship to other elementary text-books on Crystallography, as that other book of Doctor Evans, *Determination of Minerals under the Microscope*, has to H. G. Smith's *Minerals under the Microscope*,—the one for the teacher and the other for the student.

P. R. J. NAIDU.

A Text-Book of Zoology. By T. J. Parker and W. A. Haswell. Sixth Edition. Vol. I. Revised by Otto Lowenstein. (Macmillan & Co., Ltd., London), 1940. Pp. xxxii + 770. Price 36sh.

In spite of the original assertion of the authors, we consider "Parker & Haswell" not a book for the beginner. The inductive type of treatment of the subject is probably the only plea for its being considered a beginner's book. Zoology can be taught by two accepted methods. One is the so-called type method involving the description of one representative form after another; the other is the comparative method laying greater stress on the organ and comparing it with the same or similar organ in other groups of animals. Each method has its drawbacks and its advantages, and while the first method is more convenient the second is more comprehensive.

As the original preface admits, the type treatment followed in "Parker & Haswell"

has a particular danger to the young student, who is apt in his own fashion to generalise and to treat the type as the class,—a danger which is considerable in regard to the Invertebrata and which varies in intensity in the different phyla. We grant that the type system followed here is the most suitable to the beginner but it is also dangerous only to the beginner. It is harmless to the advanced student who is chiefly concerned with the general characters of the class he intends to study and who is as interested in the variations from the type as in the type itself. The type system is more dangerous, at least less advantageous, in regard to the invertebrates. It is unfortunate that they do not lend themselves to the construction of a regular evolutionary series as the vertebrates do and any book on invertebrates is bound to include inconclusive statements regarding the relationships and affinities of certain phyla.

It is now nineteen years since the text-book was revised and there is no doubt that a prodigious amount of work has been done during this period, work which has much bearing on the phylogeny of practically every group included in the book; so that the decision to omit all diagrammatic representations of phylogenetic relationships, is a wise one. They would at best represent a single view and would certainly introduce confusion.

The first section on the general structure and physiology of animals is of great importance and acts as an excellent introduction to the book, familiarising the student with the many technical terms that are in store for him during his study of the science and acting as a "comprehensive glossary of fundamental morphological terms which in later parts of the book, are used without further explanation". This section has been largely rewritten and has been illustrated with diagrams nearly all of which are new.

The revision of the rest of the text consists mainly in two points: first, in a rearrangement of the different phyla, with the clear warning that any such regrouping is largely a matter of convenience rather than an implied relationship. Thus the inclusion of Bryozoa (Ectoprocta), Phoronida, Brachiopoda and Chætognatha in Section X has no more phylogenetic significance than the inclusion of Nematoda, Nematomorpha, Acanthocephala, Rotifera and Calysozoa (Endoprocta) in Section XI. The relegation of the

Mollusca to the end of Vol. I in the previous editions created, however unintended, the wrong impression that they were the most nearly related among the invertebrates to the Chordata. This, we are glad to notice, has been corrected and the Echinoderma occupy, rightly, the last section of the volume.

The second important feature of the present revised edition lies in the incorporation of newer and more recent schemes of classification of the phyla.

Finally the illustrations: nearly 150 of them are either replacements of old ones or are completely new figures, and many of these are in black and white, which forms an added advantage both to the student and to the teacher.

"Parker and Haswell" occupies an unique place among text-books of Zoology and unaffected by the numerous later English publications both in England and America, it will continue to maintain its position. The revised edition forms yet another landmark in Zoological publication and will help popularize the study of this "noble science" to the English knowing students of the world.

B. R. S.

Lectures on Malaria. By Lt.-Col. G. Covell, I.M.S. Health Bulletin No. 5. (Manager of Publications, Delhi), 1940. Pp. 33. Price Annas 5 or 6d.

It is surprising to see what ignorance there is to-day, even in educated and intelligent circles, as to the basic principles of Malaria transmission and its control, and that about a disease which quietly and almost imperceptibly takes a toll of over one million lives every year in India, besides incapacitating or lessening the efficiency of many millions of others. There is nothing dramatic about this disease. People do not fall down dead in street corners. There is not that terror which an epidemic of cholera or plague generally rakes up. It is a slow devitalising disease, but unlike tuberculosis, another dreaded disease, can be cured by simple and effective remedies and the percentage of fatality can be rendered comparatively low. Hence the general apathy and ignorance is deplorable.

How much of knowledge should laymen be expected to possess about this disease and how far it will help them to combat it is a moot question. Generally speaking

an individual by himself can do very little to prevent the spread of Malaria, except perhaps by protecting or curing himself. But the case is entirely different regarding laymen such as engineers, forest officers, civil servants, military, railway and plantation officers, whose duties constantly bring them into contact with the disease. A clear appreciation of Malaria problems by them may go far to mitigate its ravages, or in many cases even to prevent it. A small but very interesting example may be quoted. In 1926 Lt.-Col. Covell visited the Andamans and found a certain non-malarious village, about a mile from a salt water swamp. He studied the situation and found that between the village and the swamp was a belt of dense forest composed of high trees and pointed out that this should on no account be cut down. "A few years later an enthusiastic new Commissioner visited the village and had a broad gap cut through the belt of the forest to allow the villagers to get the benefit of the sea breeze. The result was a severe outbreak of malaria due to an invasion of the village by *Anopheles sundaicus*!" Malariology, all over the world, can point to innumerable examples such as this, of well-meant but unintelligent interference with nature by executives, resulting in disastrous consequences. One has only to study the post-history of many of the recent magnificent irrigation projects in India to appreciate the force of this point. The construction of New Delhi is another excellent example and to quote Lt.-Col. Covell, in this regard:—

"As the result of the prevalence of mosquitoes and malaria it has now been found necessary to spend a sum of approximately Rs. 2,500,000 (£187,500) on anti-malaria works, many of which have been designed to correct conditions which should never have arisen. About half of these works have been completed but the remainder are at present indefinitely postponed owing to lack of funds. Had the necessary antimalaria work been carried out as an integral part of the construction of the new capital, it would have been done at a very much lower cost."

How different things might have been if the great builders of irrigation projects and cities had a little appreciation of the tremendous power of the insignificant mosquito. Truly, to quote another distinguished malariologist, "A colossus stumbling over a gnat".

In the pamphlet under review the author has very successfully gathered such information as may be useful to lay executives in the form of eight well-arranged lectures, dealing concisely with the history, epidemiology and control of malaria. Emphasis has been clearly laid on the point that a Malaria Control Scheme, however small or big, must be investigated and directed by a competent trained malariologist. It is a very special branch of preventive medicine, which even distinguished surgeons or physicians may not fully comprehend. Moreover, the great necessity for executives to consult malariologists, before embarking upon projects which interfere to any degree with the balance of nature has been well stressed. This is a small pamphlet but is crammed with information and is very readable. We wish that arrangements could be made to place it in the hands of every executive in India, official or non-official. T. R. R.

1. How to do a Malaria Survey. By S. R. Christophers, J. A. Sinton and G. Covell: Fourth edition by Lt.-Col. G. Covell, I.M.S. Health Bulletin No. 14. (Manager of Publications, Delhi), 1939. Pp. 208. Price Rs. 1-12-0 or 2sh. 6d.
2. Instructions for Collecting and Forwarding Mosquitoes. Revised 3rd edition. By Dr. I. M. Puri. Health Bulletin No. 13. (Manager of Publications, Delhi), 1940. Pp. 57. Price Annas 8 or 9d.

These books are two of the fourteen bulletins issued by the Malaria Institute of India (formerly Malaria Survey of India) dealing with several aspects of malaria research and which are in constant use by malaria workers in India and neighbouring countries. The first of these two has now become a standard work on the technique of malaria surveys and the present edition is in bulk the same as the previous edition, a notable inclusion in the present one being a description of the modern Barber and Rice's technique of precipitin tests to determine the blood meal of mosquitoes.

The second of the two volumes is the third edition of the very useful publication dealing with the technique of handling of mosquitoes. Dr. Puri has thoroughly revised it and has presented an excellent handbook.

Both the above publications provide their own testimony of usefulness by coming out

in their fourth and third editions respectively. The instructions, mainly directed to Health and Medical Officers who take up malaria studies, are very clear and full.

T. R. R.

students, and deals with British agriculture and crops, it will be useful to students outside Great Britain as an introduction to the general principles of soil management and crop growth.

B. V. N.

German-English Science Dictionary. By Louis De Vries. (McGraw-Hill Book Company, London), 1939. Pp. x + 473. Price 18sh.

The advancement of science in recent years has been proceeding in borderland fields where the fundamentals of two or more sciences operate. This interplay of knowledge, which had led to spectacular results, is destined to yield a richer harvest as the whole band of devoted researchers break through their watertight compartments and commence to study their problems in the light of advances made in other fields. The progressive Entomologist to-day, for example, can ill-afford to dissociate himself from the many aspects of biology; even physical sciences have been influencing the progress of entomological science.

An adequate study of German scientific literature, so essential to every research worker involves a comprehensive mastery over a wide range of vocabulary. This situation is ably met by the Dictionary which has been compiled by Professor De Vries with the active collaboration of the members of the Graduate Faculty. It is a volume which will prove extremely useful to a large circle of research workers in fields of agricultural, biological and physical sciences.

M. S.

A Student's Book on Soils and Manures.

By Sir E. J. Russell. Third Edition, revised and rewritten. (Messrs. Macmillan & Co., Ltd., London), 1940. Pp. viii + 296. Price 8sh. 6d.

Sir E. John Russell, the Director of the Rothamsted Experiment Station, has brought out a third edition of *A Student's Book on Soils and Manures*. The second edition was in the year 1919. The present volume is revised and re-written incorporating the practical aspects of the progress that has been made in the intervening years between the second edition and now. Although the book is of an elementary nature written for

Annual Review of Biochemical and Allied Research in India, Vol. 10. (Society of Biological Chemists, India), 1939. Pp. 168. Price Rs. 3 or 6sh.

The report attempts at being a faithful record of the activities of Indian workers in a field considered biochemical. Almost all the contributors draw attention to the increasing quantity of work done in the local branches dealt with. For the new information it contains, one is nearly tempted to regard this volume as an appendix to that authoritative, annual world review of biochemistry edited by Harold Murray Luck.

The task of reviewing the work in the several branches has been performed by the respective experts attached to representative institutions in the country. To mention only a few, review on food and nutrition comes from the Nutritional Research Laboratory, Coonoor, Animal and Dairy Science from the Imperial Institute of Animal Husbandry, Bangalore, that on Pharmacology is contributed from the Haffkine Institute, Bombay, while we get an account on soils, fertilisers and manures from the Indian Institute of Science, Bangalore.

The Society of Biological Chemists has been regular in presenting these annual reports successively for these ten years now. A modest achievement, but a rich experience, yet the present volume betrays indulgent editing. Not the least among its impositions is an infectious repetition of themes.

M. S.

Statistical Year-book (1346 Fasli or 1937 A.D.). By Marhar Hussain. (Government Press, Hyderabad), 1939. Pp. 966. Price Rs. 5.

This is an yearly publication of the Government of H. E. H. Nizam's Government. It contains detailed statistical information about every department of the Government such as Revenue, Excise, Education, etc. The publication is a very useful one.

K. V.