University of Madras:

I. M. R. Ry. Rao Bahadur A. Lakshmanaswami Mudaliar, Avl., B.A., M.D., F.C.O.G., has been appointed full-time Vice-Chancellor during the period of leave of the permanent Vice-Chancellor, Mr. R. Littlehailes, C.I.E., M.A., from the 5th June to the 28th August 1936.

II. Dr. M. Damodaran, M.A., D.Sc., F.I.C., Director, University Biochemical Laboratory, has been promoted from the grade of Reader to that of Professor in the scale of Rs. 750–50–1,000.

III. Messrs. S. Vaiyapuri Pillai, B.A., B.L., and R. P. Sethu Pillai, B.A., B.L., have been appointed Reader and Senior Lecturer in Tamil in the Oriental Reserach Institute.

IV. The following persons have been declared qualified to receive the Degrees noted below:—

Doctor of Philosophy.—

1. Miss C. Minakshi, M.A., for her thesis "Administration and Social Life under the Pallavas, The Kailasanatha Temple, etc.".
2. Miss Eliza V. Paranjoti, M.A., L.T., for her thesis "Saiva Siddhanta".

Doctor of Science.—

S. Gopalakrishnamurti, M.A., for his thesis "Atomic Energy, States of Tellurium, Iodine and other Related Elements".

Master of Science.—

1. N. Kesava Panikkar, B.A. (Hons.), for his thesis "Studies on South Indian Brackish Water Actiniaria".
2. P. K. Sesha Ayyar, B.Sc., for his thesis "Absorption and Fluorescence Spectra of Organic Compounds".
3. T. K. Srinivasan, B.Sc., for his thesis "Action of Sulphuric Acid on Cotarnine, Action of Bromine on Narcotine, etc."
4. T. Varahulu, B.A., for his thesis "Physical and Chemical Studies on Sugarcane-Jaggery".

V. The Sir J. C. Bose Prize of the value of s. 350 has been awarded to Mr. Kaviraj Dhirendranath Ray, M.Sc., Calcuttla, for his thesis on "A Critical Study of Hindu Medicine".

University of Mysore:

Examinations:

The results of the examinations held in March 1936 were announced. They were as follows:—

Sl. No.	Name of Examination	Examined	Passed
1	Intermediate	1,151	418
2	B.A. (New)	126	65
3	B.A. (Old)	37	9
4	B.Sc. (New)	150	69
5	B.Sc. (Old)	1	..
6	B.A. (Hons.) Preliminary ..	37	26
7	B.Sc. (Hons.) Preliminary ..	58	48
8	B.A. (Hons.) Final ..	32	29
9	B.Sc. (Hons.) Final ..	37	29
10	M.A. Qualifying Test ..	2	2
11	M.Sc. Qualifying Test ..	2	2
12	B.T.	66	43
13	F.E.	74	48
14	S.E.	77	50
15	B.E.	38	30
16	Second M.B.B.S. .	31	14
17	Final M.B.B.S.	35	11

Recognition of Medical Degrees by the British Medical Council.

The Executive Committee of the British General Medical Council has resolved that the degree of M.B., B.S., granted by the Universities of Bombay, Lucknow and Madras together with other qualifications granted by the Universities of Bombay and Madras, which were presumably registerable, should again be recognised for registration if granted on or after February 25, 1930, and that the degree of M.B., B.S., granted by the University of Patna should be recognised for registration if granted on or after May 11, 1935, the date on which the University was included in the first schedule to the Indian Medical Council.

Reviews.

Introduction to Quantum Mechanics. By L. Pauling and E. B. Wilson, Jr. (McGraw-Hill Publishing Co., Ltd., London, 1935.) Pp. xiv + 468. Price 30*s.* net.

In the course of the ten years since its inception the subject of Quantum Mechanics has grown with extreme rapidity and has now reached a stage when the foremost scientists are acutely conscious of the necessity for new fundamental extensions. No student of Physics or Chemistry can now afford to be ignorant of the methods and important results of this young branch of knowledge. There is no dearth of books on the subject: in fact most of the advanced general text-books contain chapters dealing with the fundamentals. Still the new book by Pauling and Wilson fulfils a definite want, *viz.*, that of the student with limited mathematical equipment who is desirous of acquiring a good working knowledge of the subject. The classical books in this field have set out with the intention either of providing an authoritative compendium for specialists or exhibiting new ways of presentation. The book under consideration has, on the other hand, the student and the non-physicist constantly in mind and the treatment is suited to self-study. It is very encouraging to the student to be told that "an extensive previous knowledge of partial differential equations and their applications in

mathematical physics is not a necessary prerequisite for the study of Wave Mechanics and indeed the study of Wave Mechanics may provide a satisfactory introduction to the subject for the more physically minded or chemically minded student". The spirit displayed in this quotation runs through the entire book. In keeping with this point of view matrix mechanics and Dirac's theory receive only a very brief introductory treatment at the end of the book. Wave Mechanics is, on the other hand, treated in detail and its several methods are lucidly explained with applications to definite problems. The two introductory chapters give the student an excellent orientation towards the problems of the old quantum theory, which first found a solution in Quantum Mechanics. The Schrodinger equation is introduced on its own merits as being a description of Nature worthy of confidence just like the second Law of Thermodynamics. The necessity for the existence of eigen-values of the parameters occurring in a differential equation is finely illustrated by a geometric consideration. The subsequent chapters deal with the solutions of the Schrodinger Equation in the various well-known cases of the oscillator, the rotator, the Hydrogen atom, etc., the mathematical steps being fully explained and the properties of the new functions encountered being derived as occasion demands. The Schrodinger Perturbation theory is fully explained with illustrative examples while the other methods of approximately solving the wave equation such as the variation method, the Wentzel-Brillouin-Kramers technique, Slater's method for many electron systems, and Hartree's method of the self-consistent field are explained without going into details in the case of the more difficult of these methods. The student is now and again assisted by timely repetition of definitions. The Helium atom, the Hydrogen molecule-ion and the Hydrogen molecule are discussed in detail as providing typical examples of the methods previously explained. The rotation and vibration of diatomic and polyatomic molecules are briefly considered and Quantum statistics, and the Uncertainty Principle are also touched upon. There are a number of appendices, most of them giving mathematical details kept out of the body of the book. Some problems to be worked by the student are appended to the various sections. Their value will be enhanced if some hints for their solution and the results are briefly given, say at the end. As is usual with American publications the book is finely got up, and somewhat highly priced. We have noticed a few harmless misprints, *e.g.*, on pages 264, 282, etc. Every advanced student of Physcis and Chemistry may heartily be recommended to make a close study of the book. We are convinced that the perusal of more advanced treatises and the original papers will then occasion no difficulty.

Mathematics of Modern Engineering. Vol I. By R. E. Doherty and E. G. Keller. (John Wiley & Sons, New York; and Chapman & Hall, Ltd., London, 1936.) Pp. 1–314 (i–xxi). Price 17*s*. 6*d*. net.

This joint work of "an engineer who has worked with mathematics and of a mathematician who has worked in engineering tempered by the atmosphere of the engineering office and the class-room" is designed as a course of study for undergraduates who aspire to work later in the higher levels of engineering service. Not the least interesting part of the work is the foreword to instructors wherein is explained the method of approach of the authors towards mathematical teaching in engineering institutions. This foreword of nine pages ought to be printed as a separate brochure and free copies of the same supplied to those who are responsible for the direction of engineering studies in this country as this would go a long way in bringing about the right attitude of engineers towards mathematics in place of the prevailing misconception that relegates it to the position of the Cindrella of the engineering curriculum. One very frequently hears the cry that mathematics taught at college is absolutely useless to the engineer in "after life". To people of this frame of mind the reviewer would strongly recommend a careful reading of pages xii–xiii of this foreword. It comes as a surprise that in the General Electric Organisation fifteen years ago practically all the engineering problems requiring real scientific analysis were referred to a very few individuals most of whom had received their college training abroad and that a remodelling of the courses of study with a definite orientation towards mathematical and theoretical work has gone a long way towards setting this right. According to the authors "the thing that seems to count professionally is the cultivated intellect" and there is no better way of securing this than by a rigorous discipline in mathematical

analysis. While it is true that the majority of engineering graduates of the average calibre have no opportunities for original work, it is a suicidal policy to frame the curricula of engineering studies with only such types in view. What is wanted is a course that is suited to produce engineering graduates who are capable of exercising leadership not only in the highly technical sides of engineering but also in commercial engineering and in executive capacity. This book is designed as a course for undergraduates who aspire to such leadership.

The difficulties of writing a text-book to suit these needs is however very great. The recent advances in engineering have utilised the services of so many branches of higher mathematics that it would be impracticable to incorporate accounts of all these in a book designed primarily for engineers. There is perhaps no branch of engineering so elusive or undefined as "Engineering Mathematics" and certainly none more often sinned against. We have scores of text-books on this topic which are either a heterogeneous collection of problems from different branches of engineering collected to illustrate special mathematical methods or a sort of collection of mathematical formulæ, at best a *mathematiker Hilfsmittel* for engineers. The list of the branches of mathematics used to-day in engineering which the authors have prepared makes imposing reading and serves to bring home this difficulty vividly. Theories of periodic orbits, the special three body problem, the damped pendulum, quasi-differential and integral equations, partial differential equations of the eighth order, dyadics and tensors, calculus of variations, vector analysis, Heaviside operational calculus, dimensional analysis, topology, analytic theory of differential equations and theory of functions of a complex variable constitute a formidable list indeed. Add to these, the theory of matrices and Riemannian and non-Riemannian geometry and one has a clear idea of the impossibility of writing a book giving accounts of all these topics.

One could, nevertheless, adopt the compromise of preparing a suitable mathematical environment for the proper appreciation of these topics and this appears to be the method chosen by the authors. With only the first volume before us it is difficult to judge correctly how far the authors have been successful in this attempt. This volume consists of four chapters. The first giving a general introduction to the mathematical formulation of engineering problems is admirably done. The second chapter, headed "Basic Engineering Mathematics," treats ordinary differential equations, determinants, Fourier series, solution of algebraic and transcendental equations, dimensional analysis and graphical and numerical methods. This chapter contains, therefore, most of the mathematical methods in every-day use in engineering and the authors are to be congratulated on their treatment of solutions of equations and dimensional analysis. This book shows better than any other the great power of the method of dimensions. Particular mention may be made of the exhaustive discussion of Græffe's general theory and the π theorem of dimensional analysis. The inclusion of the principle of similitude is a welcome and novel feature. The third chapter on vector analysis, although it covers only about fifty pages is just as good as, if not better than, most elementary texts on the subject like those of Gans or Runge or Coffin. It also contains a short but excellent introduction to dyadics. The fourth chapter on Heaviside's operational calculus, gives the latest developments in this branch and incorporates the unusual but extremely welcome practice of adding a good introduction to the theory of functions of a complex variable. This was the right place where the authors might have introduced an account of integral equations but perhaps this is reserved for the second volume.

If the contents of Vol. I are any indication of what the second volume is going to be, we can safely say that this series will easily constitute one of the best works on Engineering Mathematics so far published. If an Honour's Course in Engineering is ever established in our Universities this book might be unhesitatingly described as an ideal text-book. Even otherwise some of the methods and topics dealt with in the book would be very usefully taught in the ordinary courses.

Prominence may be given to the authors' coining of the phrase "*Engineering functions*" for the "well-behaved" functions $y = f(t)$ which are such that in $t_1 < t < t_2$,

(i) y is not infinite,
(ii) there is exactly one value of y for every value of t,
(iii) y has only a finite number of maxima or minima, and
(iv) y has not more than a finite number of finite discontinuities.

B. S. M.

Graphical Solutions. By C. O. Mackey, Cornell University. (John Wiley & Sons., New York; Chapman & Hall, Ltd., London, 1936.) Pp. 1–130. Price 12*sh.* 6*d.*

The title of this work indicates that it treats of the solutions of different engineering problems by graphical methods. The scope of the book is, however, not so exhaustive. Problems of graphic statics, graphical solutions of algebraic, transcendental and differential equations and the graphical methods of Fourier analysis do not find any place in the book. In the author's own words, he has "not attempted to read and abstract everything that has been written on the subject" of graphical solutions. The book is the outcome of a course of lectures offered by the author himself and confines itself to solution of equations and derivation of functional relationships by the methods of scales and charts and the problem of curve fitting. The treatment is elementary without sacrificing elegance or clarity. It is eminently practical and is illustrated by a wealth of examples, mostly from problems of mechanicsl engineering.

The chapters on intersection charts and alignment charts go much farther than most books on the subject. The author goes up to the limit of the construction of net work charts to solve equations in five variables. The use of determinants in constructing alignment charts with three scales is a novel feature of the work.

The best part of the book is the last chapter wherein is given an excellent account of the constantly recurring problem of finding an empirical equation to fit observed experimental data. A detailed treatment is given of the determination of constants when the assumed equations are known by applying the methods of selected points, residual summation and least squares. The treatment of three-constant empirical equations is also exhaustive and one would have liked to have the hyperbolic functions introduced here. While the methods for determination of constants is fully explained, nowhere does one find methods for guidance in the choice of the number of constants in the empirical equation tried for a particular set of data.

This book will certainly be of great use to students of mechanical engineering, especially in the study of heat engines. The last chapter on curve fitting deserves to be very widely known to all practising engineers. The printing and get-up are excellent and the price too appears reasonable.

B. S. M.

Commercial Fertilisers, Their Sources and Use. By Gilbert H. Collings, Associate Professor of Agronomy, Clemson Agricultural College. (P. Blackiston's Son & Co., Philadelphia, 1936.) Pp. xiv + 356. Price $3·25.

A compendious text-book suitable for use in Colleges of Agriculture and comprising practically the author's class-room lectures in the subject, this handy volume will be found to meet the needs of a much wider circle of agriculturists than the College students for whom it is primarily intended. The author takes full note of the great development in fertiliser research in recent years and of the many important changes in the concepts on plant nutrition and has made a special point of giving actual research findings gathered comprehensively from most important research centres. American experience naturally predominates but on fundamental questions all available sources are laid under contribution. Descriptions are given of the sources, the methods of manufacture and trade relating to all the different commercial fertilisers at present on the market including the new products like Ammophos, Leunophos, Nitrophoska, Nitropotasse, Nitrochal and so on, while among organic manures the preparation and value of synthetic or artificial cattle manure is also described. The description of the methods of fixation of atmospheric nitrogen cover all known methods though one wishes they were fuller. So likewise are the methods of manufacturing superphosphates and the several concentrated and reinforced forms of this important fertiliser. The chapter on the borderland problems like the fertiliser value of elements other than nitrogen, phosphorus, and potassium forms interesting reading and fairly summarises present-day ideas as far as they can be on such a fast moving new branch of research. Sulphur, magnesium, iron, manganese, sodium, boron, chlorine, copper and even radium are touched upon under this head and their rôle as far as is known is indicated. "What fertilisers shall I use for my soil and how much ?" is certainly the question for which the interested reader would like to obtain a helpful answer in a book of this kind; we are still far away from being able to give a precise answer to this practical question of every-day importance

without running the risk of dogmatism or half knowledge. The doses recommended vary within very wide limits and afford at best only reasonable guidance. Nevertheless research is continuously in progress to devise methods of determining the manurial needs of soils quickly enough for practical purposes and the name of Wagner, Kellner, Ville, Neubauer and Schneider will readily be remembered in this important branch of research. The book gives a full and interesting account of the various laboratory tests, the Neubauer, Hoffer, Thornton, and the Troug methods—all of which are used with varying degrees of usefulness for this purpose. We should have preferred greater emphasis being placed on the importance of field experiments in this connection and an account given of some of the excellent methods coming into vogue nowadays which are designed to reduce errors in field trials to a minimum and to afford quick and fairly reliable answers. This we believe is somewhat of a serious omission in an otherwise comprehensive text-book.

A useful feature of the book is the section on the calculation of quantities of manures required to make up mixtures from various formulas and for judging comparative valuations of the different fertilisers on the market from "Unit" values. Several examples are worked out, which will be found very helpful. The statistics of the world's resources, production, and trade of the different fertilisers should interest the lay reader and are quite impressive. Germany, for instance, leads in the use of fertilisers with a total annual consumption of about 1,800,000 tons, with the U.S.A., France, Japan, Italy, the Netherlands and Great Britain coming next in the order mentioned; the U.S.A. leads in the use of phosphatic fertilisers, while Germany leads in the use of nitrogenous and potash fertilisers. The per acre consumption of fertilisers for the cultivated area is put down at 105lbs. for Holland, 70lbs. for Germany, 33lbs. for France, and Great Britain, and only 10 lbs. for the U.S.A. The world's reserves of fertiliser minerals are also estimated and it is computed that even at the present rate of consumption they cannot last for more than a thousand years. What will happen if India and China should begin to use artificial ferilisers as largely as Europe and America or if the latter should use them at the rate at which a country like Holland is using is rather a frightening prospect for mankind on this globe. The book is both interesting and up-to-date and should form a welcome additon to the number of text-books on the subject at present in use.

A. K. Y.

Introduction to Human Parasitology. By Asa C. Chandler (Chapman & Hall, London, Fifth Edition, 1936.) Pp. xvi+661. Price 25*sh*.

Since the publication of the fourth edition of this work in 1930 the science of Human Parasitology has undergone much change and numerous new problems have arisen while many of the old ones have become clarified. It seems to be the sad fate of humanity to fall a constant prey to one disease or another and probably the discovery of new maladies or fresh strains of old ones will continue as long as discerning man lasts. The discovery of a disease brings in its wake numerous problems of importance; the discovery of the parasitic organism, the study of its life-history, the methods of prevention and cure of the disease, etc., and indeed no problem of human welfare has received so much attention as human parasitology.

The author of the book under review, who is a parasitologist of great repute and long experience, has brought out a volume which has all the merits of a scientific treatise without the disadvantages of its narrow outlook. The story of the ills to which the flesh of man is prone, is a fascinating story though sordid in its details, and the usefulness of a work of this sort can only be judged by the extent to which the moral of the story is brought home to the readers. The long chapter on the part Bacteria play in undermining the health and happiness of the human race does not form part of the book and the author begins his account with the Spirochætes, though it must be admitted that the Spirochætes resemble Bacteria more than they do the Protozoa but "until the bacteriologists are prepared to assume full responsibility for them, the protozoologists will have to care for this orphan which Schaudinn left on their doorstep". But like all orphans, the Spirochæte is a most active, adaptable and vivacious organism and not a little misery and unhappiness are to be laid at its door. Relapsing fever and Syphilis would conjure enough pictures to treat them with scientific severity rather than with careless contempt.

It appals one to think that animals so low in creation as the Protozoa could wield so much power over human life. Nevertheless

it is true that this group of tiny animals is responsible for the death, annually, of an incredible number of humans. Malaria alone takes a toll that defies imagination, and that, even though practically everything is known about it. To this may be added the more important of the others,—Amœbæ, Trypanosomes and Leishmanias—a pretty kettle to stew man in. Then there are the worms, some of which like Schistosoma Trichinella, Ancylostoma and Filaria add not inconsiderably to the woes of man. The importance of Arthropods in this scheme of things is two-fold; a few are themselves parasites of no mean calibre but their real interest lies in the fact that they act as transmitters and intermediate hosts of myriads of smaller parasites conveying them from man to man and themselves none the worse for it. Ticks and mites, bed bugs and lice, flies and mosquitoes, fleas and gnats form a most imposing array of organisms which have all conspired to make man the unhappy animal that he is. Indeed, one would be tempted to single out any one of these and ask like the poet, "Did He who made the lamb make thee."

Such is the material which the author has endeavoured to present, not only to the layman but to the specialist as well, in the six hundred and odd pages of packed information. The parasites and their life-histories, the characters, the treatment and methods of prevention of the diseases caused by them are all dealt with in great detail. Useful and practical hints are offered for the alleviation of human suffering caused by the parasites, and throughout the book, there is a piquancy of style so essential in dealing with a problem of this sort. A fascinating story fascinatingly told.

B. R. S.

The Indian Zoological Memoirs. I.–Pheretima. By Karm Narayan Bahl. (Lucknow Publishing House, Lucknow; Second Edition, 1936.) Pp. x+85. Price Rs. 1-8.

The revised and enlarged second edition of this book has just been published. It will be remembered that in 1926, Dr. K. N. Bahl who is the editor of the *Indian Zoological Memoirs*, himself brought out the first of the series on the Indian Earthworm, Pheretima. A number of useful additions have been made in this edition as compared with the first one published ten years ago. In the introduction has been incorporated a classification of the Chætopoda and a list of Indian Oligochæta and more especially, the species of Pheretima, has been compiled, which will doubtless prove useful to all students of Indian earthworms. The chapter on Receptor organs is an addition while that on the habits and distribution has been amplified. The chapter on Development, has been expunged from the second edition, for reasons which the reviewer cannot quite follow. The *Memoir* does not restrict itself to the anatomy only and the information contained in the chapter on Development would not have been out of place. Many of the other chapters have been rewritten and all the latest literature on the subject has been incorporated. The paper used in the second edition is better and the types are clearer. It must be admitted, however, that the binding is very flimsy and the copy in the hands of the reviewer is already threatening to disintegrate. The book is in keeping with the latest of the series of the *Memoirs* more recently issued and it will prove useful in all colleges and schools where the Indian Earthworm is studied.

B. R. S.

Electrical Engineering in Radiology. By L. G. H. Sarsfield, M.Sc., M.I.E.E., A.Inst.P. (Chapman & Hall, Ltd., London, 1936.) Pp. 284. Price £1 5*s*.

Mr. Sarsfield has supplied a long-felt want in his admirable treatise on "Electrical Engineering in Radiology".

The Radiological Research Department at Woolwich has done splendid work for many years and Mr. Sarsfield has had ample opportunities of studying at close quarters all the problems he deals with in his book which has a large number of illustrations and many plates. There is a very good section on the lay-out, fittings and electrical dangers of Radiological Departments and the book is the most comprehensive work on the subject yet published. No X-Ray Department of any standing should be without a copy.

T. W. BARNARD.

La Diffraction des Electrons dans ses Applications. By Jean J. Trillat. [Actualités Scientifiques et Industrielles.] (Hermann et Cie, Paris, 1935.) Pp. 59. Price 18 *Francs*.

The publication of this excellent monograph on the diffraction electrons and its application by Professor Trillat is very opportune. Much work has been done in this branch of physics during recent years

and the need of a suitable book on the subject is often felt. This need is now met by the above monograph by Professor Trillat who is himself a pioneer in this field of research.

The monograph is divided into five chapters, the first of which deals briefly with the apparatus and experimental methods. In the second chapter is set forth all the recent work on the application of electron diffraction to the elucidation of the surface structure of metals, structure and orientation of crystals in metallic deposits, the nature of polish and other allied subjects. All the recent work on these lines by various workers in the field like G. P. Thomson, Finch, Kirchner, Trillat and others find a place in this chapter. Professor Trillat's work on the structure of thin films of long chain organic compounds like fatty acids, cellulose and rubber is also discussed in detail. The last two chapters are devoted respectively to the diffraction of electrons by gases and vapours, and to the diffraction of slow electrons. The monograph is well written in easy French and contains a comprehensive Bibliography on the subject which adds very much to its value. Perhaps the monograph would have been even more useful and valuable if the use of electron diffraction (in gases and vapours) for the study of molecular structure had been discussed a little more in detail. It can be recommended to all students of physics who wish to make a preliminary study of the subject before studying original papers. The monograph is sure to be welcomed by all workers in this field.

S. R. S.

La determination du sexe et heredite. By par Emile Guyénot. [Actualités Scientifiques et Industrielles.] (Hermann et Cie, Paris, 1935). Pp. 77. Price 20 *francs*.

A review of our present knowledge of the factors which control the appearance of sexuality in the lower animals, is written for general students and non-specialists. Known instances of sex-inversion in fish, amphibians and birds are described together with the results obtained when males were crossed with males, and females with females. Different types of sex-heterochromosome combinations are illustrated, as well as their behaviour during maturation. Sex-linked inheritance is explained by diagrams.

In connection with intersexes the author calls attention to the essentially unstable nature of the physical manifestation of sex (phenotype), which is dependent upon the attainment of an equipoise between two antagonistic sets of physiological factors. Both sexes are bipotential. There is no definite demarcation between maleness and femaleness and the relative position at which a state of balance is attained in each individual is determined by both genetic and environmental influences.

It is regrettable that the author decided to omit all bibliographical references merely because his work was of a limited scope. For this very reason the need for a list of sources is felt. Sex in humans is not dealt with and plants are barely touched upon. The reader of this useful review will want to learn more about the subject. Sex concerns everyone, and some knowledge of chromosome, and of which parent determines the sex of the offspring would destroy many superstitions even among the educated.

A Glossary of Technical Terms for Use in Indian Forestry. Indian Forest Records, New Series, Vol. II, No. 1. (Manager of Publications, Delhi. 1936.) Pp. 45. Price As. 5 or 6*d*.

In any technical vocabulary, words often have or acquire meanings which bear no relation to their original significance in common parlance. In Forestry, there is a further complication inasmuch as some of the terms used are defined by State Legislation, so that the same word used professionally connote different things in different countries. Just to cite an example, the term "Cattle," under the Indian Forest Act includes elephants, camels, buffaloes, etc. The appearance of *A Glossary of Technical Terms for Use in Indian Forestry*, therefore, fills a very real want in the profession. It is authoritative, being adopted for official use by the Silvicultural Conference, Dehra Dun, 1929, and revised in 1935.

By minimising cross references, the bulk of the book has been, with advantage, considerably reduced. The type and get-up of the Glossary make for easy reference work.

There are three Appendices. In the first is a list of the Silvicultural Systems compiled from Prof. Troup's work on the subject, with their French and German equivalents. It is noteworthy that under Shelterwood Systems, the expression "Blendersaumschlag" is given without an English

equivalent but with a short explanatory note, which gives a rough idea of the system more readily than any literal and pedantic translation. Appendix II details "Three Classification into Crown Classes" and the "Classification of Thinnings," while the last Appendix gives a list of "Forestry Terms used in the U. S. A. and their English Equivalents". One cannot help feeling that the usefulness of this Appendix would have been even more, if the German and French equivalents of the terms had also been given.

This book should find a place in the Library of everyone interested in Indian Forestry.

EMMENNAR.

India in 1933-34. (Manager of Publications, Delhi, 1935.) Price Rs. 1—10—0.

India in 1933–34 is the latest report prepared by the Bureau of Public Information for presentation to Parliament in accordance with the requirements of the 26th Section of the Government of India Act. This survey, which is issued under the authority and with the general approval of the Secretary of State for India, must not be taken to mean that the approval of either the Secretary of State or of the Government of India is implicit in every individual "expression of opinion". The report attempts to present in an abridged manner the general trend of events both in the Political and Administrative Spheres during the calendar year 1934 and outlines the developments in other departments in the financial year 1933–34. Those passages of an explanatory or descriptive character in respect of the subject-matter in former reports, have either been totally omitted or greatly reduced in length to keep down the size of the volume. The section on Provincial Administration, etc., has been left out but a separate chapter on the Bihar Earthquake forms a special feature of this volume.

The year 1934 will be handed down to posterity as one of the most memorable, if for no other reason than for the terrible seismic catastrophe which almost coincided with the beginning of the year. In respect of the area and of the extent of damage both to property and human lives, this seismic disturbance has very few rivals. The effect of the Earthquake was felt over an area of nearly two million square miles in India and Tibet alone, and was recorded by most of the seismological stations in the world. The devastations in certain areas in Northern Bihar were at once complete and widespread. The loss of human lives has been estimated to be 7,253 and this must be considered as remarkable in view of the fact, that in an area of 6,000 square miles, no masonry structure was left undamaged and that twelve towns with populations ranging from 10,000 to 60,000 were wiped out.

Apart from this visitation of natural fury, the crowded period of 1934 is not without interest or material. Political interest, in the main, is centred in the activities of the National Congress. The suspension of civil disobedience, which had borne no practical fruit, was as much an indication of the policy of Government as the realisation of the futility of resistance to constituted authority on the part of individuals comprising the Congress Executive. By the conclusion of the period under review, the Joint Parliamentary Committee Report was published, which may be considered as the culmination of a definite stage in the unremitting efforts to bring about constitutional reform for India. A noticeable improvement in the relations between the Government and the Congress was observable throughout this period, and Government, relieved of a pre-occupation with the task of maintaining public peace which was being threatened by the civil disobedience movement, were free to attend to administrative activities, such as the scheme for the amelioration of the economic problems of the country. Among the notable enactments of economic legislation may be mentioned the Bills for the constitution of a Reserve Bank and the amendment of the Tariff Act. Another important measure, which was passed during the Winter Session of the Assembly, was the Indian States Protection Bill which seeks to protect the administration of Indian States from the unreasonable attacks in the British Indian Press. The defence policy of Government was not without discussion, and the motion that the recommendations of the Indian Capitation Tribunal's Report was unduly favourable to India was talked out. The financial position of the country is ably surveyed and the exposition of the budgetary position of India is admirably revealed in the epitome of the speeches of the Finance and

the Railway Members introducing their respective budgets.

The communal situation was far from satisfactory and tension was increasing in acuteness. Riots which partook of a communal colour occurred at various places in connection with important festivals of both Hindus and Moslems. The communal disputes in British India had their repercussions in similar incidents in Indian States also. The terrorist movement in Bengal, which had been dormant for sometime, suddenly shot into activity in the form of a dastardly attempt on the life of the Governor of Bengal. This outrage served to awaken public opinion in Bengal to this terrible menace and the press was loud in denouncing the terrorist cult.

The other important developments dealt with in this report are those relating to Agriculture, Industry, Commerce and Communication where all-round improvement was maintained. Of special significance is the treatment of matters relating to Public Health and Education in this All-India review though they are primarily provincial subjects. A brief resumé of the work of the numerous scientific surveys is appended. The year was not without a bumper crop of both provincial and All-India conferences of economic and public interest.

Great credit is reflected on the authorities responsible for the production of this excellent report, which while preserving the high standards set up by its predecessors has achieved a notable advance inasmuch as it infuses a new spirit of approach even to the most common topics.

Forthcoming Events.

Central Board of Irrigation.

THE 6th Meeting of the Research Officers and the Executive Committee (Research Committee), Central Board of Irrigation, will be held on 7th-13th July 1936, to consider:

(1) To confirm the minutes of proceedings of the Fifth Meeting of the Research Committee, held at Simla on the 18th and 19th July 1935.

(2) To discuss the reports of the Research Officers on the research work done in their Provinces during the preceding year.

(3) To report progress in respect of the following subjects brought forward from last year:—(*a*) Means of conserving irrigation water. Stauching of canals. (*b*) Design of canal falls. Preparation of type designs. (*c*) Waterlogging and land reclamation. Questionnaire. (*d*) Testing and grading of silt. Standardisation of methods. (*e*) The Lacey silt and flow theories. (*f*) Tortuosity of rivers and their training by means of embankments. (*g*) Design of work on permeable foundations.

(4) To discuss the following new subject: Means to secure the equitable distribution of irrigation water in the future.

(5) To discuss the programme of research work to be carried out during the ensuing year, and

(6) To consider the question of Research Officers meeting during the cold weather.

Imperial Council of Agricultural Research.

July 8th and 9th, 1936.—Meeting of the Sugar Committee.

July 10th and 11th, 1936.—Meeting of the Wheat Committee.

July 13th to 18th, 1936.—Meeting of the Advisory Board.

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