

to supply the wants of Indian students and is apparently the handiwork of an experienced teacher. It gives a description of those experiments which constitute the course in practical Physics for the Intermediate Examination of Indian Universities, with fine model results set out for every experiment. A concise presentation of the underlying theory precedes the description of the experiment and it is surprising to see the amount of theory compressed into a short space in this way. The course of experiments is that common to most Indian Universities and the apparatus described is also mostly standard. The same absence of superfluous words characterises the description of the experiments, as was noticed in the presentation of the theory. Now and again a question is interposed with a 'why' or a (?) which serves to draw the student's attention to important points worth careful thought. The language is adequate and acceptable, barring a few slips here and there, such as 'compass' for 'compasses', 'a point "impressed by" forces' for 'a point "acted upon by" forces', 'slow motion "affected" with the help of a screw' for "effected", etc., 'small boats and "rafters"' for 'rafts', etc., the symbols ' and ' ' for minutes and seconds of time instead of " and " and so on. There are a few wrong statements which require correction. For example, it is stated that as the elasticity of a fluid is independent of direction, the pressure at any point is communicated equally in all directions. In explaining the relative expansion of a liquid inside a flask, it is stated that a point on the neck coinciding with the initial level of the liquid changes position owing to the expansion of the vessel and thus prevents the full expansion of the liquid from being noticed. Surely it is not merely the motion of such a point of reference but the expansion of the whole vessel that affects the observed expansion of the liquid. The statement that "molecules have the same properties as the body, and any further subdivision of these destroys their characteristic physical properties" should be removed at the first opportunity. To say that "the incident rays, reflected rays and the normal are in the plane of the paper and this verifies the first law" is not correct; when only the marks left by the pins on the paper are joined, how has it been proved that the incident and reflected rays lie in the plane of the paper? We have indicated these errors only because we feel that the book is a good one which will certainly gain a well-deserved wide currency and we should like it to be as free as possible from such blemishes. A verification of the fact that a reflected ray turns through twice the angle through which the mirror turns, and of the lateral shift of the emergent ray in refraction through a slab may be included. The printing and get-up of the book leave nothing to be desired. We feel quite certain that the book will have a richly deserved popularity among Intermediate students all over the country, and we heartily recommend it to the attention of all teachers handling Intermediate Classes.

T. S. S.

Electric Power System Control. By H. P. Young. (Chapman and Hall), 1942. Pp. 319 + xii. Price 25sh.

This book is the eleventh volume of the series of monographs on electrical engineering subjects coming out under the editorship of Mr. H. P. Young.

In this book the author (Mr. Young himself) has succeeded in bringing together all the latest and important information on the subject of system control and presenting it in a coherent and readable form. It is, therefore, very useful to the power supply engineer who cannot afford the necessary time to go through the voluminous mass of available literature on the subject. To engineers in India who very often have no access to good technical libraries it must have an especial appeal. The advanced student of the subject also finds in it much that is of value to him.

The scheme of the book is as follows. There is an introductory chapter on the parallel operation of generators and characteristics of exciters. The two that follow deal with the various aspects of voltage control of alternators and describe the several auxiliaries employed for voltage regulation. We then have in another chapter a good description of the more important synchronising gears in use to-day. The next four contain a treatment of the various aspects of system design such as control of power transfer, circuit breakers and circuit interruption, short circuit calculation and protection, and all the other complex problems, theoretical and practical, arising out of the interconnection of large power stations. A description of the apparatus used for interconnector control is the content of the ninth chapter; while the last one deals briefly with the principles of the latest development of system control, that is, supervisory control systems.

The material for the book has thus been carefully selected and well arranged, and covers all the important aspects of system design. The information included under each topic is up-to-date. A short bibliography at the end of the book giving references to the more important publications on the subject adds to the value of this monograph.

The printing and get-up of the book are in the usual Chapman style. The few misprints that still persist will, the reviewer hopes, be removed in the next edition.

The book is in short a worthy companion to the preceding ten volumes of the series, and is confidently recommended to the profession.

S. KRISHNASWAMY.

Amaravati Sculptures in the Madras Museum. *Bulletin of the Madras Government Museum* (New Series, General Section, Vol. IV). By C. Sivarama Murthi. Pp. xviii + 376. Price Rs. 14-8-0.

One of the greatest attractions to the Madras Government Museum has been for long its fine Archæological Section. And in that collection, the portion of the Amaravati Sculptures lodged forms the gem. This monograph deals exhaustively yet comprehensively with the whole subject of the unique sculptures that come from near and about Amaravati in

the present Kistna District of the Madras Presidency. Dr. F. H. Gravely, until recently Superintendent of the Madras Government Museum, contributes an appreciative *Foreword*, in which he sets forth in modest terms the many undoubted merits of the work. In view of the fact that he appears to have had much to do with its publication, it seems appropriate that his approval of it should perhaps be referred to at some length. Having regard to limitations of space, however, it cannot more than be adverted to. Mr. Sivarama Murthi has spent much time and labour on his work and as Dr. Gravely rightly observes, has produced something more than a mere catalogue of the sculptures lodged in the Museum. He has brought to bear his knowledge of art on his work also, while his presentation of the history of the Satavahana period lights up certain of its dark corners. He has also enriched our knowledge of social history and manners and habits of the period while the contribution he makes to the problem of the origin of the indigenous form of the Buddha image is indeed suggestive to a degree. It is true a galaxy of stars of the first magnitude in the study of Buddhism have undoubtedly shed light on the subject of these sculptures and their interpretation—such, for instance, by Burgess, Foueber, Coomaraswamy, to mention but a few. What Mr. Sivarama Murthi has

done will prove, however, of standing value both as a catalogue and a guide to the sculptures lodged in the Madras Museum and as a study of the architecture, history, culture and art of the period to which they belong. The inscriptions have been re-read and get their right place in the volume. The work, in view of the very solid study it offers of all that is known so far of the Amaravati sculptures in India or in the British Museum is a great contribution historically and linguistically. Mr. Sivarama Murthi deserves to be complimented on his splendid achievement, both as a lover of art and as a scholar anxious to do his bit to advance the study of a subject that has attracted, by virtue of the magnificence of the art with which it is associated such world-wide interest. The monograph, we should add, is illustrated by a number of drawings by the author and enriched by as many as five appendices devoted to relevant special topics. The general Index also deserves mention. This is altogether a volume that is bound to further research in India in many fields than one. As such it is likely to attract wide attention in archæological and art circles the world over, despite the devastating war, in which we are glad it has been found possible to issue it.

C. HAYAVADANA RAO.

SCIENCE NOTES AND NEWS

Treatment of Malaria: A Proved Substitute for Quinine.—In a country like India, where malaria takes such a large toll of life, as well as the energy and efficiency of the population, any shortage in the supply of quinine is naturally viewed with apprehension by the medical profession and public health authorities. Thus, it is good news indeed, to learn that a really effective substitute for quinine is being locally produced and that there is such sufficiency of raw materials as to enable the manufacturers to distribute no less than 14,000,000 tablets this year. The name is Laverain and it is manufactured from quinoidine the non-crystallizable alkaloids of cinchona bark.

Laverain is not new in the treatment of malaria, having been thoroughly tried for a number of years with most effective results. It has the advantages of being somewhat cheaper than quinine and of not producing certain of the undesirable after-effects, notably deafness. Under clinical tests there have been positively no cases of relapse. The news of the manufacture of Laverain on a bulk scale is welcome.

Manure from Town-Wastes.—The training course for Biochemists deputed by different Provinces and States in India in the improved process of preparing compost manure from town-wastes developed at Bangalore, was formally inaugurated at the Indian Institute of Science, Bangalore, on 4th August 1943. It

may be recalled that the Government of India recently sanctioned a sum of nearly Rs. 2½ lakhs for a programme of large-scale preparation of compost manure from town-wastes, the scheme to be worked under the auspices of the Imperial Council of Agricultural Research. Dr. C. N. Acharya, Chief Biochemist, is in charge of the training scheme.

"Bubblefil".—A new rayon yarn called "bubblefil" has been developed by E. I. du Pont de Nemours and Company, Wilmington, Del., to replace kapok. According to the *Cordage World* of March 1943, Du Pont is turning out the "bubblefil" cellulose experimentally at the rate of about 200 pounds daily. The new material has buoyant and resilient qualities, making it a potential military substitute for kapok and sponge rubber, the entire supply at present going to the armed services for life rafts, aviators' cushions and possibly other uses.

The supply of kapok has been restricted by the War Production Board to military orders for life buoys, life preservers and jackets, sleeping bags, pontoon bridges, insulation padding for airplanes and a few other specified uses.

New Hydro-Electric Scheme for Madras and Orissa.—Preliminary investigations and surveys for developing hydro-electric power by utilising the Duduna falls of the Machkand river (a tributary of the River Sabari which