

such an account of programming it is one of the best books available on the subject. The techniques proposed are clearly set out and justified by sophisticated mathematics of a type which is not usually given in books on analogue computation. Apart from statements as to the way in which analogue computers are used, there is a set of appendixes which give the bibliographies of analogue computer elements and analogue computer applications. These are reasonably up to date, but suffer from the usual defect of American books in that they ignore all the literature published outside the United States. Rather surprisingly, the book ends with some suggested laboratory experiments. These will be useful to the growing body of departments which have analogue computers and have to instruct students in their use. The book is well produced and reasonably inexpensive. It can be recommended to those interested in this art.

A. D. BOOTH

INDIAN RESEARCH ON JUTE

Jute in India

A Monograph. By B. C. Kundu, K. C. Basak and P. B. Sarkar. Pp. xv+395 (47 plates). (Calcutta: Indian Central Jute Committee, 1959.) Rs. 30.

THIS book presents a most interesting and detailed account of the scientific and economic research work on jute carried out under the aegis of the Indian Central Jute Committee over the past twenty-five years. It is divided into three sections, the first being concerned with the botany, cultivation, and diseases and pests of jute, the second with the economic and marketing problems of jute growing, and the third describing the physical and chemical characteristics of the fibre, together with notes on the technology of jute manufacture.

The jute-manufacturing industries of the world consume nearly 2 million tons of fibre annually, virtually the whole of this being grown in the eastern States of India and in East Pakistan. Before partition of the sub-continent in 1947, jute was a monopoly crop for India; after partition, although India retained the jute mills, most of the fibre-growing regions went to Pakistan. In consequence, the jute-manufacturing countries outwith India now find themselves largely dependent on Pakistan for supplies of raw material, while India herself has striven to increase her acreage under jute sufficiently to maintain the volume of her production of jute manufactures independently. The book is solely concerned with the Indian aspect, but it is against this wider background that it will be read in Britain and Europe.

Commercial jute is a bast fibre obtained from the *capsularis* and *obitorius* varieties of *Corchorus*. It is an annual crop, commonly followed by a crop of transplanted paddy, and in the first section of the book Dr. Kundu brings out very well the main factors of importance in growing and cultivation. All concerned with the production of jute, or indeed any bast fibre, will find much of value here. It is perhaps notable that the agricultural methods described are entirely manual, no power-driven machinery being employed.

Most jute growers are small-holders, and a considerable number share-croppers who pay a share of

the crop as rent of their plot of land. In section two Mr. Basak describes the economic studies which have been made into the circumstances of these small farmers, many of whom appear to live barely above subsistence-level. His comments and conclusions on the economic factors affecting the marketing of jute fibre must give food for thought to all concerned with the jute industry, and it is especially interesting to note the correlation between acreage under jute and the relative prices of jute and rice in the previous year.

The final section, by Dr. Sarkar, is somewhat condensed, and, although useful for reference, seems unrelated to the main theme of the preceding sections.

The book contains more than 400 references, the majority to Indian publications, and 75 photographs, one un-numbered and without legend. There are a few errors in the text, and throughout Indian weights and measures are used which may be unfamiliar to many readers. Unfortunately no index is provided, a serious omission in a work of this nature, which could serve as a useful reference book. These criticisms apart, however, the monograph is a welcome addition to the sparse literature relating to this fibre of world-wide usage.

H. P. STOUT

IN PURSUIT OF ANTIBIOTICS

Search for New Antibiotics

Problems and Perspectives. By Prof. G. F. Gause. (Trends in Science, Vol. 2.) Pp. x+97. (New Haven, Conn.: Yale University Press, 1960.) 4.75 dollars.

SINCE penicillin was developed as a commercial product there has been a feverish search for other antibiotics with similar or complementary properties. To-day, about a dozen antibiotics are in general use. Their discovery has been based on a purely empirical screening programme in which millions of potential antibiotic-producing organisms have been examined. Anything that could introduce a rational element into this search would be invaluable. Prof. Gause attempts to do this, and for this alone his book is worth study. His views are based on recent Russian research not too well known in Britain; it is useful to have an account of this work in English, and Prof. Gause is to be congratulated on the clarity of his exposition in a foreign language.

The author suggests that there are three principles by which the empirical search can be made more scientific. The first is concerned with the ecology of antibiotic-producers. He presents evidence that among fungi and spore-forming bacteria antibiotic-producers are more commonly found in warm soils than in cold northern soils. This could be a consequence of the richer microflora of tropical and sub-tropical soils. On the other hand, antagonistic Actinomycetes seem to be equally common in soils from all latitudes. My impression is that at present it would be premature to concentrate too much on soils from one climatic region in the search for new antibiotic-producers. But with Prof. Gause's general conclusion, that further study of the ecology of antibiotic-producers may make the search more rational, I wholeheartedly agree.