

flow through the shock, and again the treatment is of great interest, although rather involved, with results that support those of the stability investigations. Apart from the existence investigations which occupy much of this part of the book, close attention is given to the order of magnitude of the terms in the differential equations and it is shown that some terms, such as the electron pressure terms, which have been neglected by previous authors, can in fact be important.

Dr. Anderson keeps the physics of the problem well to the fore, and for the most part the mathematics is clearly presented.

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## NATURAL FIBRES

### Vegetable Fibres

Botany, Cultivation and Utilization. By R. H. Kirby. (World Crops Books.) Pp. xvi+464+54 plates. (London: Leonard Hill (Books) Ltd.; New York: Interscience Publishers, Inc., 1963.) 84s.

DESPITE the fact that vegetable fibres have been, and undoubtedly will continue to be, of the utmost importance to mankind, few comprehensive general reference books have been published on their botany, cultivation, and production. Apart from Matthews (Mauersberger), sixth edition, 1956, which deals, necessarily briefly, with this subject as one section of textile fibres, in general, one has either had to search the literature, or else to consult more narrow specialist texts (such as Haarer, 1952) or older publications (for example, Goulding, 1919).

The appearance of Dr. Kirby's excellent book comes at a time when large masses of the world's population are arriving at self-government and must realize, inevitably, the importance of husbanding their natural resources in the production of wealth. Among these, vegetable fibres of all types can play a valuable part. Not only does this book provide an easy means of acquiring technical information: its recognition of the importance of economic factors is also most commendable. Apart, therefore, from students of textiles and agriculture, etc., it will be consulted by textile interests at executive policy-level and also by those entrusted by Governments with the economic development of this aspect of agriculture.

The subject-matter is well classified into botanical families and deals mainly with plant cultivation and fibre production, and to a lesser extent with botanical matters. In addition to flax, hemp, jute, *Hibiscus* sp., ramie, sunn and Mauritius hemp, sisal, New Zealand flax, manilla, coir, etc., a large number of lesser-known fibres are discussed in detail. The chapter on the mechanical production of stem fibres is a stimulating introduction to modern practices which may have to play a vital part in the future. The very great difficulties of handling, expeditiously and economically, large masses of fibre-bearing material, in which the valuable fibre content may only be small; the difficulties of imitating, mechanically, actions which appear to be so easily, albeit laboriously, done by hand; and the delicate economic balance between mechanization on one hand, and peasant production on the other, are all realistically assessed. It is obvious that the author, who has visited fibre-producing areas all over the world, writes very much from first-hand knowledge.

It is to be expected, however, that a publication of this type, in which one author deals with so large a field, is unlikely to be free from criticism, more especially in those sections where information is probably second hand. The comparatively scant attention paid to 'utilization' suggests that this term might have been inferred rather than meriting inclusion in the title. Why, for example,

is jute, second only in bulk importance to cotton, and also flax, given only a few lines compared with two pages for ramie, a comparatively unimportant fibre?

It is unfortunate also that clear line-drawings could not have been included of the bast fibre lattice work and its positioning within the stem: and also drawings or clear photomicrographs of the ultimates within the fibre bundles of most of the fibres instead of only one or two. In general, also, the many photographs of decorticating, ribboning and other machinery are not good, except possibly in a pictorial sense, for unlike line drawings they do not clearly illustrate how the machines work. In a reference book, clear tabular presentation of statistics is to be expected. It is to be regretted that many useful data are scattered, not very systematically, throughout the text, a drawback which will not appeal to the business executive. It would have been helpful if the admirable costing flow-sheets, presented on p. 189 for sunn hemp and on p. 214 for kenaf, could have been repeated for some other fibres.

In Chapter 1, and elsewhere, some erroneous generalizations exist. Thus, tensile strength is not necessarily the most common test to which fibres are submitted (p. 8); not all fibres are affected by moisture in their physical properties (p. 8); the cementing matter holding the ultimates together in the fibre bundle is by no means always pectinous (p. 11); nor are all fibres sprayed with lubricants or oil during processing (p. 13). It is not necessarily true, in all aspects of vegetable fibre usage, to claim that the higher the cellulose content the more valuable the fibre (p. 10). Retting is not the most important operation for all fibres (p. 21); many are won from their natural setting by mechanical means only. During the Second World War, so-called natural or mechanically decorticated-unretted flax was used without de-gumming by the dry-spinning industry, which did not find it stronger or superior to retted fibre (p. 35). What are 'strong' chemicals (p. 10)?

Greater reference might also have been expected to be made to the considerable experience gained and research done by the U.K. Flax Advisory Committee in all phases of flax cultivation, retting and production etc., during the Second World War, some of which was published in *Quality in Flax* by A. J. Turner (1954).

Apart from these minor criticisms, however, this book is of undoubted merit: well printed, well-bound, and carefully indexed, with an extensive bibliography, it is assured of wide demand.

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## A HAND-BOOK OF THE LARGER FUNGI

### Collins Guide to Mushrooms and Toadstools

By Morten Lange and F. Bayard Hora. Pp. 257 (96 plates). (London: Wm. Collins, Sons and Co., Ltd., 1963.) 30s.

JAKOB LANGE'S magnificent coloured plates of toadstools in his *Flora Agaricina Danica* have long been among those most valued by specialists in European Agaricales. It was, therefore, a happy thought on the part of his son to make a selection of them available on a reduced scale, two-thirds the size of the originals, to a much wider audience, in the form of a cheap popular hand-book dealing with the larger fungi. A few plates of the more conspicuous Ascomycetes, Gasteromycetes, Boletes and Aphyllophorales have been supplied by other hands, but it must be admitted that some of those depicting polypores are much less successful than those of agarics by J. Lange. Sometimes, even with the latter and with Boletes the colours as reproduced scarcely bear out the brief descriptions printed opposite each plate. Oddly enough, the figure of *Laccaria proxima*, duly shown with