

MUCH ABOUT THE SOYBEAN

Soybean Chemistry and Technology

By Klare S. Markley and Warren H. Goss. Pp. viii+261. (Brooklyn, N.Y.: Chemical Publishing Co., Inc.; London: Macmillan and Co., Ltd., 1944.) 20s. net.

THAT versatile oriental bean, the soybean, has been a long time coming into its own among Anglo-Saxons. For many years it has been a staple product in China and Manchuria where, according to travellers' tales, all sorts of uses were made of it. After the War of 1914-18 it came to Britain in quantity, the beans having their oil 'solvent extracted', and uses were sought for the cake both as animal feed and as a source of protein for humans. A serious check was given to its use when cattle were injured by it owing to the presence of a poisonous glycoside. The oil was not too well liked by the soap-maker; it was not so 'soft', that is, unsaturated, as cotton seed oil, or hard enough to replace tallow, and the cost of hardening it by the catalytic process was not remunerative. Lastly, the growing of it was not understood either in Britain or in America.

During the last decade all this has abruptly changed, at least in the United States. It is stated that soybean now leads in the production of edible oil, having outstripped cotton seed oil, while the meal, as a superior protein ingredient for livestock and poultry food, has become of great utility. More important, soy flour in various forms is gaining in popularity: it is an ingredient of rations, included in bakery and other food products, and is sold direct to housewives. This latter applies to Great Britain also where soya flour, which we are beginning to learn how to use, has become a valued additional source of protein.

As protein shortage is one of the most serious deficiencies which ail the world of the future, the importance of the soya bean as an easily grown high-yielding source of it cannot be gainsaid. One question will be the nutritive value of this particular kind of protein, having regard to its constituent amino-acids.

There is thus considerable scope for a work on the chemistry and technology of soya, which this book seeks to provide: it is apparently sponsored by the Soybean Nutritional Research Council. Soybeans have fortunately proved to be a profitable crop in the corn belt of the United States; hence the willingness to extend their cultivation. During the last ten years, the acreage has increased tenfold, and the yield per acre has gone up by nearly 50 per cent; hence the production is almost fifteen times as great, the major extension taking place during the war years. A large amount of applied science has contributed to this result. There are many hundreds of types and strains, and the bean is peculiarly sensitive to changes in soil and climate; so that elaborate studies have been necessary to increase the yield and quality under local conditions.

The beans average 40 per cent of protein and 18 per cent of oil, with upper limits of 50 per cent and 24 per cent respectively. They are remarkable in being a rich source of the enzyme urease. The sugars include two of the rare ones, raffinose with 18 and stachyose with 24 carbon atoms. The glycosides comprise saponins, phytosterolins and isoflavone. The oil has about 2 per cent of phosphatides.

The first part of this book gives a useful summary of the chemical components of soy, and includes about five hundred references to the original literature. The

second half deals in some detail with the processing mainly for oil, but contains also the most modern development of the production and refining of phosphatides. More than a hundred oil mills are listed as extracting the oil, an example of how quickly such an industry can be established. Soy flour is dealt with in a dozen lines only: it would appear that there is still much to do with it before it becomes a large-scale human food; one had expected to find much more under this head.

The book is probably mainly intended for practical use by those directly concerned with soybeans in one way or another, and as such is a model of what a really helpful text-book can be. It is easily written, concise and full of information not otherwise available.

There is no reason why Britain should not grow and process soybeans, provided a race can be found which fits in with the vagaries of our climate. Indeed, the Ministry of Agriculture ought to give direct encouragement to such work, for Britain just cannot afford to be left out of such modern progressive development. The day is definitely passed when we can be content to import the product of other men's enterprise and brains and stand still at home. If wool can be made from arachis protein, surely soya protein may prove an alternative source.

We can confidently recommend the book to those interested in the soybean. E. F. ARMSTRONG.

SINGING BREEZE

Wartime Harvest

Poems. By Marie Carmichael Stopes. Pp. 92. (London: Alexander Moring, Ltd., 1944.) 5s.

ALTHOUGH this choicely arranged volume of poems provides us with a further example of the author's versatility, I do not feel that Dr. Stopes is, as yet, sufficiently co-ordinated as a poet to be justly classified.

As Lord Alfred Douglas very rightly affirms in the preface to this collection—"adequate matter and form are here"—but despite this invaluable framework and a particularly fresh singing quality, there is often a falling-off of brushwork within the frame. "Instead of Tears", for example, dedicated to men who lost their lives on H.M.S. *Cossack*, containing as it does some of the finest lines in the volume, at the same time serves to illustrate the author's variability of treatment:

"Brown berried sea-wrack tangles round your throat
In festive chaplets where no fresh wreathed flowers
Will reach you, and your resolute white limbs
Are draped with laminarias crinkled strands."

A lovely stanza with an ease and flow of music possible only to the true poet, yet in the following stanzas we meet these all too familiar clichés: "this foul war"; "nightmare fiend"; "bright future full of happy toil". Surely a decline from the unobtrusive elegance of the quoted passage.

Thus we are borne along throughout the book in a series of such undulations between superb sweeps of melody, much admirable thought which, alas, often wilts into the banal.

I think, perhaps, the author's sustained lyrical vigour tends to obscure her critical faculty in this way. How else explain the inclusion of such verse as: