

guidance and encouragement given in the course of this work.

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April 14, 1942.

¹ Cooke, M. C., *Exotic Fungi, Grevillea*, 1882, 10, 125.

ON "THE MANUFACTURE OF GLANDULAR PRODUCTS IN INDIA"

PROF. B. B. DEY¹ has drawn pointed attention to the urgent need for increased emphasis on hormone-research in India and towards the possibility of producing almost all the glandular products used in medicine from indigenous raw materials. It is a pleasure to be able to record that considerable progress has already been achieved in this direction, of late. Bar-ring insulin and the sex hormones, e.g., œstrus-producing hormone, corpus luteum hormone and the male hormone, almost all other glandular products commonly used in therapeutics, such as adrenaline, pituitary (posterior lobe) extract, dry thyroid powder, liver extracts, etc., are now being produced largely in and around Calcutta and also partly in Bombay from indigenous raw materials. Many of these are found on careful analysis and standardization, both chemically and pharmacologically, to be of good quality and agreeing with standard requirements. The production is not yet commensurate with the demand but this aspect will not be difficult to attend to gradually, provided sufficient encouragement is forthcoming from the medical profession and the public.

As has been pointed out by Prof. Dey, accurate and unbiased standardization of every batch of the products manufactured is the key-note of success in such endeavours. Naturally many manufacturing concerns in this country cannot afford to maintain a technical staff and equipment adequate for such responsible work. During the last 3 or 4 years, the Government of India have rendered con-

siderable help in this regard, through the Biochemical Standardization Laboratory, to the manufacturing concerns engaged in the production of these glandular preparations. To give a real fillip to this industry, however, facilities, of a much more comprehensive character than are at present available at the Biochemical Standardization Laboratory, have to be provided.

Excepting the anti-anæmic principle of the liver, almost all glandular products can be biologically assayed fairly accurately on laboratory animals. For satisfactory and reliable data, however, it is necessary, in many instances, to use animals kept under standardized conditions, with regard to temperature, diet, housing, mating, etc. This necessitates a large animal-housing establishment with trained personnel to look after the animals. Unfortunately many medical research institutions in this country have not paid adequate attention to this vital paraphernalia of a biological laboratory. Calcutta, in spite of many facilities for research work, is very poor in this regard. The idea that the climate of Calcutta is not suitable for laboratory animals is untenable, as with more or less similar warm climatic conditions, Bombay (Haffkine Institute) has succeeded in rearing and breeding white mice and white rats in sufficient numbers.

If collaborative effort between chemists, pharmacologists and bacteriologists are encouraged and adequate laboratory facilities are offered, there seems no reason why every type of glandular product of standardized potency could not be made in India from Indian raw materials. Some of these like adrenaline, thyroxine and sex hormones can also be synthesized provided the intermediate chemicals and reagents are brought out into India from Great Britain or America.

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April 13, 1942.

¹ This Journal, 1942, 11, 110.