## PRESERVATION OF PANCREAS-GLANDS WITHOUT REFRIGERATION

AT present, and possibly for many years to come the pancreas glands of slaughtered animals and of fish are the only source of insulin. During and after the war, insulin producers have had great difficulty in recovering their raw material, mainly because of the absence of appropriate refrigeration installations.

Unless the glands are processed without delay, or refrigerated at low temperatures (-20° to -30° C.,) their insulin content is rapidly lost. To find a means of preserving glands without refrigeration was therefore a problem of great importance.

After many unsuccessful experiments, a new process has been developed in the laboratories of the Farbwerke Höchst which answers these requirements.[1] This process is based on the principle of converting the pancreas-glands into a stable dry product by treating them with an anhydrous salt which binds their water content as water of crystallization. Anhydrous sodium sulphate is normally used for the purpose. As 142 grammes are required to bind 180 grammes of water, approximately 600 grammes of the salt are theoretically necessary to bind the water contained in 1 kilogramme of pancreas. In practice, however, 700 grammes are required. The dry preparation may be maintained at the degree of acidity required, for instance pH 5, by the addition of sodium hydrosulphate, tartaric acid, or any other suitable agent.

The idea of DEHYDRATING an organ in order to preserve it is not new.[2] But although the principle has already been applied by several workers to the preservation of pancreas[3], it has not so far yielded good results, mainly because these workers failed to recognize that it was essential that the glands should be disintegrated rapidly and thoroughly and treated with an anhydrous salt not after, but during, the disintegration. This process is most suitably performed in rapid cutting-machines of the type found in most butchers' shops.

The cutter consists of a rotating dish with a set of rapidly revolving sickleshaped knives which simultaneously perform the disintegration and mixing, the pancreatic tissue being cut and its surface immediately brought into contact with the salt. One of the advantages of this new method is that since it is simple and safe, it can be applied without special training by the personnel of slaughter-houses.

In a large cutter, 12 to 15 kilogrammes of glands can be processed at a time, and in the smaller cutters commonly found in butchers' shops, 8 to 10 kilogrammes. The glands should be collected and prepared as soon as possible after slaughtering, and then be kept in cold storage (5-8° C) until they are processed (not later than the same day). They are spread uniformally in the dish of the cutter and covered with 700 grammes of anhydrous, finely-ground sodium sulphate for each kilogramme of pancreas. The machine is then set in motion. After 8 to 10 minutes a homogeneous and rather compact mass is obtained and placed on iron sheets in a layer about 5 centimetres thick. The mass is then left for about one hour and taken into the refrigeration chamber for cold storage. By the next morning the cake will have solidified into slabs which are so hard and compact that they can be piled up without any special care.

If the batches are too large and processing is delayed, difficulties are likely to arise, because the mass solidifies too rapidly.

The preparation obtained must be stored in as dry place as possible at a temperature of 5-8° C. (cold storage). Under these conditions even after six months in storage, no loss of insulin occurs; even storage at normal room-temparature—provided that it does not rise to 30°C—is tolerated for several days without damage, which gradually facilitates transport.

Insulin is obtained from this preparation in the usual way, with the same yield as is usually obtained from frozen glands.[4]

By applying the process described above, the Farbwerke Höchst were able to double the number of slaughter-houses from which they obtain the necessary pancreas glands for the production of insulin. It may be said that the new method has so far stood every test and has done much to stave off the worst consequences of the insulin shortage for diabetics in Germany.

*(Courtsey of Chronicle of the World-Health Organisation,* July 1948, p. 153).

---

1. Application for German Patent No. 75315 IV a/30h filed on 21 June 1943. 2. See Frankel, in Abderhalden, *Handbuch der biologischen Arbeitsmethoden*, Hamburg, 1936-40, Sect. I. Part 6, p. 4. 3. See German Patent No. 441614 and British Patent No. 188660. 4. Some difficulties in centrifuging were experienced at the beginning owing to the salt content of the preparation.

## COMMERCIAL TIMBERS OF INDIA

TO bring to the notice of the public in these days of shortage of raw material, some more Indian timbers of great commercial potentialities, the Forest Research Institute, Dehra Dun, has published a brochure "Some More Commercial Timbers of India" in its new Utilisation Series. The publication deals with 28 timbers, some of which proved very suitable for various purposes during the last World War, when there was an unprecedented demand on the timber resources of India.

Before the War, the use of these timbers was restricted either because the forests in which they are grown were not easily accessible, or because their commercial possibilities had not been explored in peace time. The new publication gives a general idea of the possible uses of these timbers based on experiences gained during the war period particularly in four inrections: for general constructional work including carts and carriage building, for plywood packing cases and light furniture; for tools handles and for shuttles, toys and decorative articles.