The Prevention of Goitre

A Talk by Dr. Duncan Cook, Medical Officer of Health for Dunedin recently Broadcast by 4YA

IN recent years much scientific attention has been given to the needs of the body; in consequence the treatment and prevention of disease is now centred on supplying those needs rather than the extensive use of drugs.

One of the greatest advances of modern medical investigation has been the discovery of the substances which the body requires for its normal operation, and the diseases which result when these substances are lacking. Vitamins, iron, sunlight and iodine are only one aspect of the problem, for other substances which are needed arise in the body itself and their deficiency results in disease.

It has been found that the thyroid gland produces a secretion which can be formed only when iodine is present in the food supply. The secretions of the thyroid profoundly affect a great number of different body processes.

Heavy doses of thyroid extract speed up the vital engines to such an extent that unless enormous quantities of food are provided, there is a breakdown of the substances of the tissues themselves in an effort to get more fuel to burn; and the animal or man wastes away.

Goitre in New Zealand.

SIMPLE goitres—which term is applied to enlargements of the thyroid gland—are extremely common in New Zealand, as all with trained powers of observation can see for themselves by studying the passers-by in the streets.

It is not a new problem in New Zealand. Goitre was known to the Maoris in pre-European days, and in 1875 was very noticeable in the women of the Tuhoe tribe in the Urewera district. In 1925 300 Maoris of both sexes were examined in this district by Dr. Hercus, and 18 per cent. were found to have well-marked goitre.

The first reference in New Zealand to a goitre problem among the European population was made in Christchurch, in 1888, when the medical superintendent of the mental hospital was impressed by the frequent occurrence of goitre in the Christchurch district.

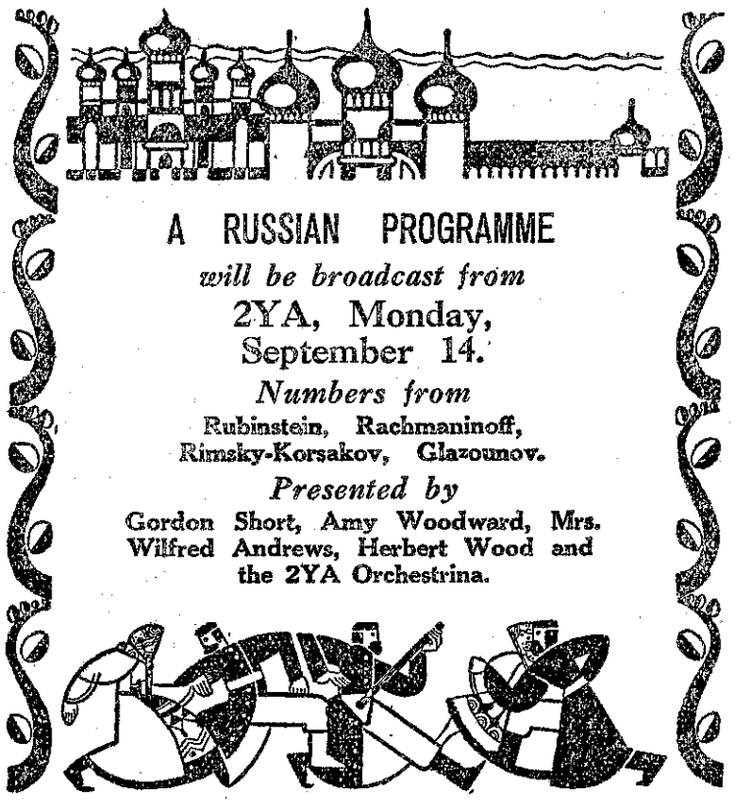
In 1910 Dr. Colquhoun established the fact that goitre was prevalent in many districts of New Zealand. The first statistical figures of value were obtained during the examination of recruits in the late war, when over 1,500 men out of 130,000 examined were rejected for active service on account of goitre.

In 1920, 1500 school children were examined by Drs. Hercus and Eleanor Baker in Canterbury and Westland. Thirty-two per cent. were found to have markedly enlarged glands, and in a further 29 per cent. the glands were enlarged to a less degree. An investigation of St. Helens Hospital, Christchurch, over a period of twelve months showed that 60 per cent. of the mothers had goitre and that 8 per cent. of the babies were born with goitre.

Extensive goitre surveys of school children throughout New Zealand have now been carried out and the goitrous areas have been clearly defined.

From these facts it is evident that endemic goitre presents a very real and pressing problem in this country. It is happily true that in the majority of cases the enlargement of the gland amounts to no more than a disfigurement. In an appreciable number of cases, however, in children, there are minor disturbances of health arising from goitre. It is well to remark that endemic goitre is a stepping stone to Cretinism in children.

With an enlightened population such as ours this should never occur, but we must take our warning seriously and not allow this goitre problem to master us.



Causation of Goitre.

DESPITE centuries of observation and speculation, there still remains a sharp division of opinion as to the fundamental cause of goitre.

The century-old theory of a deficiency of iodine in the food supply of the affected areas receives considerable support, notably from Switzerland, America, Norway and New Zealand.

This simple theory was first suggested in 1849, but has languished for over 70 years owing to the difficulty of estimating the minute quantities of iodine involved.

The field evidence in New Zealand early led to a systematic investigation of the iodine deficiency theory. If iodine deficiency is the basic cause of endemic goitre in New Zealand, it should be possible to demonstrate an inverse relationship between the incidence of goitre in different localities and the amount of iodine in the soil. It should be possible also to demonstrate that a direct connection is maintained between the iodine content of the various soils and the vegetable and animal produce grown upon them.

The chemical investigations were commenced by Mr. Carter, under the direction of Professor Hercus, at the Otago University in 1922, and were at first limited to the iodine content of various soils. The refined methods for iodine estimation designed by Fellenberg in 1923 were not then known. In 1924 Roberts determined the iodine content of a wide range of plant and animal foods from goitrous and non-goitrous districts. Over 500 representative samples of soil were analysed.

When these data were correlated with the goitre incidence among school children a very striking inverse relationship appeared. Put in ordinary language, this means that goitre is high where iodine content of soil is low, and low where soil iodine is high.

Iodine in Foodstuffs.

THE results may be summarised by stating that marine products are richest in iodine, next in order comes food derived from fresh water (e.g., watercress), and then eggs, wholemeal cereal products, leafy vegetables and milk. Refined cereals and root vegetables are low in iodine content.

Summary of Causation.

WHEN the important and varied functions of the thyroid gland are considered, it is evident that many different demands may induce thyroid enlargement.

Certain enlargements of the gland occur despite adequate iodine in the food. It is not, therefore, contended that iodine deficiency is the only cause of goitre in New Zealand, and that other accessory factors cannot produce goitre in isolated cases.

The weight of evidence in this country clearly indicates that the deficiency of iodine in the soil and food supply is the basic cause of the widespread endemic type of goitre occurring in well-marked areas.

In 1929 Dr. R. A. Shore, of the Health Department, and R. L. Andrew, of the Dominion Laboratory, published a series of similar investigations in the North Island to those which have been carried out in the South Island. One of the main findings is as follows:—

Generally speaking, where the iodine content of the soil is high the incidence of goitre is low, and when the former is low the latter is high.

Similar mineral deficiency diseases have been demonstrated in New Zealand. On the Moutere hills, where there is a deficiency of phosphorus and lime, stones are common in the kidneys of sheep. Bush sickness of cattle has been found to be due to a deficiency of iron in the soil. Animals in goitrous areas in New Zealand develop a craving for soil containing salt and iodine in high concentration, and instinct guides them to the correct areas for obtaining it.

Preventive Measures.

IF goitre in New Zealand is due to iodine deficiency, it should be possible to prevent the disease by supplying the need. The value of iodine in the prevention of goitre has been abundantly proved on a commercial scale in the prevention of goitre in sheep, pigs and trout.

It is essential in man that iodine should be supplied in carefully controlled dosage, or better, as a constituent of a natural food. The amount required daily can best be appreciated by considering that 1 ounce of iodide of potassium is sufficient to supply roughly the whole population of New Zealand for one day.

The freedom from goitre of the coastal tribes of Maoris in pre-