# THE IODIZATION OF THE DHANKUTA WATER SUPPLY

J.P. WARD, \* M,B,, F.R.C,S,

After a survey of the Dhankuta population in June, 1969 it was found that the incidence of goitre was 32. % As iodized salt is not easily available in Kosi Zone yet, it is well worth while iodizing the water supply as this is by pipe lines from a large water tank.

The Netherlands used iodine installation in the municipal water supply with good results which compared favourably with results in other countries where iodized salt was used.

80 micro-grams of Iodine is required per person per day I man drinks 1.5 litres per day.

Therfore, 60 micro-grams should be added to each litre of water to provide just over the minimum requirements.

Now using Potassium Iodide Solution 0.5% 100 cc. contains 0.5 gram 200 c.c. contains 1 gram.

If the water tank holds 1,000,000 litres of water, then 60 gm of potassiom idodide added to it will give 60 micro-grams per litre.

As potassium iodide solution 0.5% contains 1 gm. in 200 c.c., 60 grams would be contained in 200 x 60 c.c. = 12,000 c.c. = 12 litres.

The Dhankuta large new reservoir holds 24,000 gallons or 104,160 litres. To iodize the water 12 litres of 0.5% potassium iodide solution should be added to each 1,000,000 liters of water. Therefore, 1.2 litres of 0.5% potassium iodide solution should be added to the tank each time it fills. To allow good mixing the solution should be poured into the tank as soon as the outlet taps are turned off and will be ready for drinking by the time the taps are turned on again. This procedure is performed twice daily. The taste of the water will be no different and such tiny quantities will be quite undetectable.

### Summary

1.2 litres of 0.5% Potassium Iodide Solution should be added to the main reservoir tank twice daily when the outlet taps are turned off.

<sup>\*</sup>Britain Nepal Medical Trust, Biratnagar, Nepal. Present address: 17-18 Winfrith Newburgh Dorchester, Dorset, England.

Jodized Salt.

Iodized salt machines for adding the correct amount of potassium or sodium iodide to pure salt can be purchased from:—

Arenco-Alite Machines Ltd., LETCHWORTH, Herts., England.

W. Gardener & Sons, Lid., GLOUCESTER, England.

Novadel Ltd., LONDON, England.

An average price is £500 or 25,000 Rs. N.C.

#### THYROID SURVEY IN DHANKUTA

J.P. WARD, M.B., F.R.C.S,

Goitre is common in Nepal, particularly in the Himalayan Foothill region. Dhankuta is a foothill township in Kosi Zone, with a piped water supply and a Government hospital, and is thus very suitable for study. The survey was divided into two parts, the first a field survey of the population in their homes. 1,000 people were examined, all of whom had lived in Dhankuta for more than two years. The second a small survey of hospital attending patients, 250 in all who were examined for thyroid enlargement whatever their ailment. They were not all residents of Dhankuta, some were from the surrounding villages.

The thyroids were assessed by clinical examination and divided into groups 0, 1, 2 and 3, as directed by the W.H.O. goitre survey recommendations. In group 0 the thyroid gland is impalpable. Group 1, the gland is palpable but not visible in the normal position. It is visible with the head extended. Group 2, the gland is readily visible in the normal position. Group 3, the gland is so greatly enlarged that it is readily visible as a prominent goitre at a considerable distance.

## Population survey results.

Number of persons examined	1,000
Number with goitre	322
The Dhankuta bazaar population has a 32.2% incidence of g	goitre.

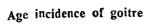
## Further analysis.

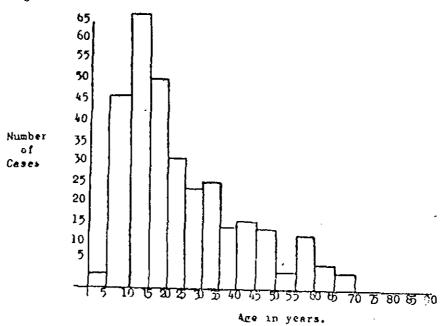
Of those persons examined 553 were female and 447 were male.

201 females had goitre and 121 males had goitre.

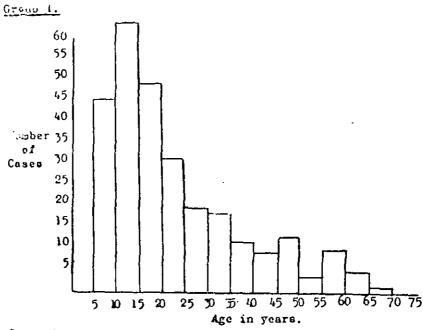
36.3% of the famales had goitre and 27.1% of the males had goitre. Of the 1.000 persons examined:

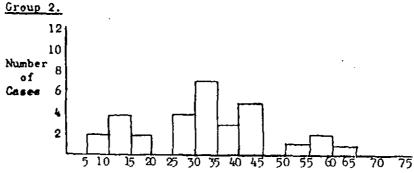
There	were 678 with no goitre	67.8%
There	were 281 with group 1 goitre	28.1%
There	were 32 with group 2 goitre	3.2%
There	were 9 with group 3 goitre	0.9%

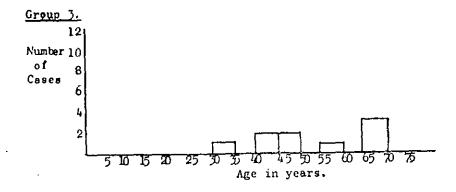




The age incidene of the different goitre groups.







# Results of Dhankuta Government Hospital Survey.

Number of patients examined	. 250
Number with goitre	.91
Dhaukuta Hospital attenders have a 36.4% incidence of	goitre.

## Further analysis

55 were grou	ıp 1	22% of patients
17 were grou	ıp 2	6.6% of patients
19 were grou	ıp 3	7.8% of patients
of group 3 att	tended the Hospital for surgical as	sessment of their goitre.

#### Discussion.

It is interesting to note that goitre is common in Dhankuta particularly of the group 1 type. Small goitre is common among the young\* 5-25 years, medium sized goitre in the middle aged and large goitre in the elderly.

### Conclusions.

In view of the 32.% incidedce of goitre\* in the Dhankuta population and 36.% in Hospital attenders, it is well worth while, in view of the complications and sequelae of thyroid disease, that supplyementary iodine is made available to the population.

It is worth while for the local government, the Jilla Panchayat, to iodize the water supply to Dhankuta until iodized salt is freely available.

<sup>\*</sup> It is necessary to examine 932 persons to ensure a maximal statistical error of 10./\* if There is a 30./. incidence in the population. A 40./. incidence of goitte requires only 600 persons to be examined to ensure a maximal statistical error of 10./.