NOTES ON ENDEMIC GOITRE IN NORTH-EAST BENGAL.

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RECENT communications on goitre in the BRITISH MEDICAL JOURNAL have led me to collate the following facts with regard to the occurrence of the disease in the district of Baksa, situated at a height of about 2,000 feet above the sea level. Some two miles away to the south lies the intensely malarious Terai. To the north lie the Eastern Himalayas, on the lower slopes of which Baksa is placed.

The soil, according to Hunter's *Gazetteer*, consists of vegetable mould, gneiss, clay, slate, gravel boulders, conglomerate, soft sandstone, and a little lignite. Limestone is found in considerable quantities in the neighbourhood. The soil is extremely porous, so much so that in the cold season the streams often disappear into the ground for long distances, appearing again lower down.

The inhabitants of the district are of two distinct and widely different classes. The permanent inhabitants are Bhutias, a squat, sturdy race of the Mongolian type, who earn their living as coolies to the military station, or by carrying enormously heavy loads of merchandise up the Himalayas into Bhutau. They are omnivorous, and will eat the flesh of an animal which has died from disease; poverty, however, causes a large number of them to be vegetarians. The chief diseases they suffer from are goitre, syphilis, malaria, and intestinal parasites.

The temporary inhabitants of the station are the troops in garrison. These in the present instance are Rajputs from the North-Western Provinces. They are men in the prime of life, healthy, practically free from syphilis, and living under excellent hygienic conditions. They are all vegetarians. Here we have two groups of men of widely different races, living within a couple of miles or so of one another under the same climatic conditions, but under different conditions as to occupation, etc. The one class—the Bhutias—were born here, the other class—the sepoys—came here from Bareilly, and had been here about fourteen months when I examined them.

In the neighbouring Bhutia village of Chunabutti I examined the thyroid glands of 169 persons of all ages, from a baby 12 hours old to an old woman of 70. For purposes of classification four degrees were recognised, namely, well marked, marked, slight, and very slight. (Some of the goitres were enormous; 23 or 24 inches circumference is by no means an uncommon neck measurement.) No attempt was made to select the cases; I simply went from house to house and examined every one I found.

Of the 169 Bhutias:

42, or 24.8 per cent., had no goitre.
37, or 21.9 " had very slight.
36, or 21.3 " had slight.
30, or 17.8 " had marked.
24, or 14.2 " had well marked.

Thus of 169 Bhutias, 127, or 75.2 per cent., were affected with goitre.

If children under 12 be eliminated, then of 120 people over that age, we find that—

15, or 12.5 per cent., had no goitre.
32, or 26.6 " had very slight.
23, or 19.2 " had slight.
26, or 21.6 " had marked.
24, or 20.0 " had well marked.

Of 120 Bhutias of 12 years of age and over, 87.5 per cent. were affected with goitre.

Of 49 children under 12:

27, or 55.2 per cent., had no goitre.
5, or 10.02 " had very slight.
13, or 27.51 " had slight.
4, or 8.27 " had marked.

There were no well-marked cases.

Of children under 12 years only 44.8 per cent. suffered, as compared with 87.5 per cent over that age.

The particular lobe of the thyroid most affected also presents some peculiarities.

Of the 127 cases of goitre:

In 43 cases, or 35.8 per cent., the right lobe was the one most enlarged.

In 41 cases, or 34.16 " the enlargement was general.

In 22 cases, or 19.2 " the isthmus was most enlarged.

In 17 cases, or 14.16 " the lateral lobes were equally enlarged.

In 4 cases, or 3.34 " the left lobe was most enlarged.

Amongst the men, the most common appearance is a general

enlargement of the whole gland (lateral lobes and isthmus), 38 per cent. being so marked, while 21.4 per cent. had the right lobe most enlarged. The women inclined especially to the right lobe; among them, 46.3 per cent. had their right lobe most prominent. In many it was the only part affected, in others the isthmus was only enlarged. This special susceptibility of the right lobe among the women is quite noticeable on even the most casual observation. Amongst the children the enlargement is usually general (45.4 per cent.), the right lobe and the isthmus each claiming 22.2 per cent. of cases.

On examining the sepoys in garrison here, I got the following results:

Of 380 men examined, 205 men, or 54 per cent., had their thyroids distinctly enlarged.

Of these 205 men, 114 (or 30 per cent. of the wing) had definite goitres, the remaining 91 (24 per cent. of the wing) being affected only to a slight degree.

As stated above, these men had been twenty months in Baksa, were healthy, and had come from a non-goitrous district.

It is generally stated that where goitre prevails there cretinism is also common. My experience here does not confirm this. I cannot recall seeing a single cretin amongst the Bhutias, nor can I find traces of any. I know of one epileptic and one half-imbecile boy, but I have seen no cases to compare with the idiots one sees in English asylums. Myxedema I have also failed to find. Another statement made¹ is that the majority of goitrous subjects are mentally deficient and dull. This the Bhutias strongly deny. They say many of their most powerful nobles and llamas are men with very large goitres. One or two went so far as to say that a large goitre was a sign of extra intelligence, but I imagine that on this point their opinions were somewhat biased.

Most of the Bhutias say that their goitres increase during the rainy season; this is borne out by our out-patient register and by the regimental admission book for 1895. In the latter, for the months of July and August the admissions were several times more numerous than for the remainder of the year.

There is apparently no definite relation between goitre and the occurrence of menstruation or pregnancy. Practically all the Bhutias denied that they noticed any change at their menstrual periods; two or three women told me that whilst carrying a child they noticed their goitres increase in size, but generally the answers obtained were very indefinite.

I discovered only one congenital case—a boy, aged 9 years, who had an enlargement of his right lobe at birth. Recently it is said to have got smaller, and it is extremely hard to the touch—almost stony, in fact. Both of this boy's parents are without goitres, and another child of the same family that I saw at the age of 12 hours had no goitre.

As to the causation of goitre I can say but little. The water used by the Sepoys gives the following results on analysis (in parts per 100,000):

Total solids, 3.7; chlorine, 0.4; free ammonia, 0.004; albuminoid do., 0.01; nitrogen as nitrates, 0.036; hardness (Clark's), total, 2.0; temporary, 0.5; permanent, 1.5. No blackening of residue on ignition. Trace of sulphates, and only a very minute trace of iron.

The Bhutias have two streams from which they draw their supply (A and B); the analysis of them is:

Total solids (A), 14.5; (B), 9.45. Chlorine (A), 0.4; (B), 0.4. Free ammonia (A), 0.008; (B), 0.006. Albuminoid ammonia (A), 0.0088; (B), 0.012. Nitrogen as nitrates, etc. (A), 0.03; (B), 0.03. Hardness total (A), 10.5; (B), 3.5. Hardness temporary (A), 7.0; (B), 1.5. Permanent (A), 3.5; (B), 2.0. Residue on ignition (A), No blackening, (B), slight browning. Sulphates (A and B), trace; iron (A and B), minute trace.

All the British officers stationed here during last rainy season suffered from enlarged thyroid glands. In their case the drinking water was passed through a Pasteur filter; all other water was consumed in the shape of tea or soda water.

In Quain's *Dictionary of Medicine* goitre is ascribed to a double salt of iron and magnesia, whilst Stevenson in the BRITISH MEDICAL JOURNAL of October 3rd, 1896, ascribes it to iron pyrites. It will be seen from the above analyses that iron is present only in very small quantities, whilst the permanent hardness is nowhere more than 3.5.

Lime is popularly supposed to be a cause; the Bhutias to a man eat slaked lime with their "pán" and betel nut, yet there is apparently no connection between the two. Many Bhutias who are great lime eaters have no goitres. Again, the sepoys never touch lime, and yet developed goitres to a considerable extent.

A third theory is that carrying heavy loads up and down hills may cause thyroid enlargements. Many Bhutias earn their livelihood in this way, but the sepoys do no such work, and are by no means exempt.

The liability to goitre is evidently much less before the age of puberty than later; 55 per cent. of children below 12 had no goitre, yet they had lived all their lives in a malarious district. The sepoys, who had only been here twenty months, were attacked as above.

Is it not possible that goitre may spring from an animal or vegetable rather than from a mineral cause? Why should limestone or iron cause goitre? Many people take iron for months and get no goitre, and if every baby that drank lime water developed goitre some other diluent for milk would have been discovered long ago.

Why, again, should goitre be affected by the seasons, if it be due to a mineral poison? Personally, I believe it is due to an animal poison—say of an amoeba type, and resembling the malaria organism. We see the enlargement of the spleen against the malarial organism, the lymphatic glands against streptococcus or the tubercle bacillus; why should not the same process go on in the thyroid gland?

An organism with a selective power against the thyroid gland or its secretion enters the blood; for a time the system battles against it, and in a certain number of cases successfully. In other cases the organism is too strong for the phagocytic resources of the system, and we have the thyroid enlarging (? hyperplasia) in an effort to combat the poison. This latter argument is, I think, strengthened by the results of treatment. The ordinary endemic or parenchymatous goitre may be treated in two ways: (1) By counter-irritation with iodine or red iodide of mercury; (2) by thyroid feeding.

The first of these methods might be applied to almost any (non-inflammatory) swollen gland. It simply means counter-irritation, a larger blood supply to the part, and consequently increased activity and phagocytosis on the part of the gland, plus a certain "alterative" action from the mercury or iodine.

Thyroid feeding is also an effectual method of treatment in most cases of parenchymatous goitre. I have records of sepoys' neck measurements diminishing from $\frac{1}{4}$ to $\frac{1}{2}$ an inch weekly in circumference under two thyroid tabloids daily. These were B. and W. 5-gr. tabloids. How does this come about? Simply, I take it, that the goitre poison is overcoming gradually the resistance of the system; the thyroid hypertrophies in an attempt to overcome the poison; additional resisting power is administered in the shape of thyroid glands; with this help the system can keep the poison in check, and the thyroid diminishes to its normal size. When the thyroid feeding is stopped the gland may again enlarge. All these facts tell in favour of an organismal as opposed to a purely mineral theory.

It is also, I believe, recognised that epidemics of goitre occur at times in the Punjab and North-Western Provinces. I have no literature available here on the subject, but a sudden outbreak seems to be more associated with a specific organism than with a mineral poison, which would probably take some time to act, and then act slowly.

These views as to etiology are advanced with the utmost diffidence. I have no microscopical or bacteriological data with which to support them, but taken in conjunction with the above statistics, a bacterial theory seems much more likely to be correct than does a mineral one.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, October 3rd, 1896, p. 974.

NOTES OF A CASE OF CHRONIC SUPERFICIAL DISSECTING GLOSSITIS.*

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As cases of the kind about to be described are not very common, possibly the sketch and description will not be uninteresting.

* Read at the annual meeting of the Midland Branch, British Medical Association, at Leicester.

H. C., aged 21, a non-smoker, first consulted me as to the state of his tongue in November, 1896. There was no history or appearance of syphilis. He had suffered in the same way with his tongue for some five or six years past. It improved and then relapsed. He was not addicted to drink, taking occasionally only a little beer, but he had had attacks of dyspepsia, and when these were on, the tongue was sore also, as might very naturally have been expected. The tongue was large, and gave the impression of being swollen, the surface smooth (save for the furrows to be noted presently) and glossy red. On each side of the median fissure, however, there were whitish leucomatous patches on the dorsum and two or three at the tip of the tongue, looking, to use the late Mr. Marrant Baker's expressive phrase, as if they had been touched with nitrate of silver. There were deepish fissures running in for half an inch or so from the edge of the tongue; these though not ulcerated were extremely tender, as was the rest of the surface of the tongue. His teeth were fairly good, he was rather anæmic, and, as was mentioned above, subject to indigestion. His diet was reduced to a very simple one, allowing no condiments or salt meat, or anything, in short, which could irritate the tongue, and he was permitted to take a little claret. He was put on a mixture of potassium chlorate, tincture of nux vomica, and gentian for over two months; then he took for another month a mild pre-

Photographed from a painting by Dr. E. Mansel Sympton.

paration of iron. In local application he had glycerine of borax as a mouth wash. Later his tongue was painted with a solution of chromic acid (gr. x-3j), and for about eight or nine times with a solution just double the strength.

The improvement, though slow, was very marked. His tongue became much smaller, the islands of leucoma (?) vanished, and the cracks closed. In less than three months' time he had almost a normal tongue.

The late Mr. Baker did not allude to any fissures in his admirable article on the Diseases of the Tongue in Heath's *Dictionary of Surgery*, and these fissures do not seem so deep as those in Wunderlich's true "dissecting glossitis" but I think the chronicity, the superficial nature of the complaint, and the fissuring of the tongue may justify the conglomeration of names at the head of this note.

MEMORANDA: MEDICAL, SURGICAL, OBSTETRICAL, THERA- PEUTICAL, PATHOLOGICAL, Etc.

TONSILLITIS ACCOMPANIED BY RAPIDLY FATAL PYÆMIA.

ON August 9th, L. B., aged 17, a strong, healthy girl, went into service in a village a few miles from her home, and on August 13th developed a sore throat, accompanied by pains in the back and limbs, but continued to do her work until Sunday, the 15th, when, though the throat was no worse, the pains in her limbs had become so severe, that, as she said, she had to go upstairs on her hands and knees.