mary veins; the superficial circumflex iliac is also seen communicating with the long thoracic and lower intercostal veins.

The case was read and the patient was shown at a district meeting of the British Medical Association, held at Gravesend in May, 1892.

FEEDING WITH FRESH THYROID GLANDS IN MYXŒDEMA.

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As an addition to the extremely interesting observation lately recorded by Dr. Hector Mackenzie,¹ the following brief notes of a case of myxœdema, treated in this manner, may be of interest:

Mr. —, aged 53, has been under my care from time to time since 1886. Not long after that date he began to show symptoms of myxœdema, the chief being anæmia and gradually-increasing puffiness in the usual positions—eyelids, hands, back of the neck, etc., which has lately been very marked. One of his earliest symptoms was non-purulent middle ear deafness, which improved by inflation and was accompanied by a general puffy state of the nasal mucosa. He also had the usual sensation of chilliness, and latterly his hair has begun to fall off.

In regard to the state of the thyroid gland, on July 16th, 1886, I made the following note: "Firm small swelling of the right lobe and isthmus of the thyroid gland," and on May 15th, 1887, I noted that the swelling of thyroid was "smaller and softer." The urine, examined on several occasions, contained no albumen, or only a trace. He has had various remedies, such as iron, arsenic, hypophosphite of soda, and amongst others, a course of Turkish baths, which did not appear to benefit him much.

On October 22nd, 1892, he was seen by Mr. Arthur Roberts of Kensington, under whose care he had also been at a previous date. Mr. Roberts then found his pulse weak; his face and eyelids, as well as the back of his hands, were very puffy and swollen, and the back of his neck was so enlarged and hard that he could only hold his head upright with an effort; his chin was almost resting on his chest. At Mr. Roberts's suggestion, and with my concurrence, treatment by feeding with fresh sheep's thyroid glands was begun.

November 12th, at 12 noon, he took one thyroid gland² minced up and mixed with anchovy paste on toast, washing it down with a little brandy and seltzer. He felt no effect, except depression on the following day, but on November 14th he awoke up about 4 A.M. with sharp headache and intense aching in the back and limbs, which continued for three days, and obliged him to keep his bed. These symptoms passed off, but from this time (according to Mr. Roberts's report) the swelling of his face, hands, and neck all disappeared, and he had a natural look.

On November 28th he took another gland, which is said to have been followed by headache after the same interval of time. As this gland produced nausea, the third one, which was given on December 1st, was administered in soup, but this method did not appear to answer owing to its coagulating in the hot liquid. Another raw gland was given on December 2nd, and again on December 3rd, making a total of five glands.

I saw the patient on December 14th and 15th. He had quite a changed appearance to what I had known him to be like for some years. There was no puffiness of the eyelids, which were thin and seemed retracted over the globes; there was no swelling at the back of his neck, and the puffiness all over the body, if there was any remaining, was very much diminished. He holds his head up without apparent difficulty. The thyroid gland cannot be felt. His skin, which has usually been dry and scaly, has desquamated freely since the gland treatment. The latter has produced no perspiration, and no diuresis has been noticed. He considers himself weaker, and says that ever since taking the first thyroid he has had a strange heavy feeling in his head, with vertigo and palpitation on stooping. His pulse is 64, regular, compressible. Temperature in mouth 97°. Pulse and temperature were unfortunately not taken during the treatment. It is only fair to say that he has had severe mental worry, which may partly account for his head trouble. Other circumstances also render it advisable to discontinue the treatment at present, but it is proposed to recommence it shortly in $\frac{1}{4}$ or $\frac{1}{2}$ gland doses.

This case confirms Dr. Mackenzie's observation, and there can be no doubt that this method of treatment deserves a trial. At the same time the intense aching produced by a single gland should lead to careful watching during its administration. The aching is doubtless due to the circulation in the blood of the products of the solid œdema, and it was therefore more intense after the first dose of gland than after the others, as the products to be removed were at first proportionately greater. It is interesting, if confirmed by future observations, to notice that the interval between the administration of the gland and the aching was fully thirty-six hours. The enlargement of the thyroid, noticed in the earlier stages of the case, is of course corroborative of disease of that organ. The intensity of action of a gland depends, it

is reasonable to suppose, in part on the amount of colloid material in it. This varies greatly, as I have shown elsewhere, and probably corresponds to different states of functional activity of the gland.³

In 1876 I stated, as the result of an investigation into the minute anatomy of this organ, that "one, possibly the chief, function of the thyroid gland, is the formation within the vesicles of a material which is transferred from these by the lymphatics to the general circulation, there to serve some purpose in the animal economy as yet unknown." This view is further corroborated by what now seems evident from recent researches on myxœdema and cachexia strumipriva—namely, that the specific secretion of the thyroid gland (colloid material), whichever way it be introduced into the circulation, whether, as occurs in health, through the lymphatics of the thyroid (after secretion into the vesicles of that organ), or whether it be introduced through the subcutaneous tissue (G. R. Murray) or the gastro-intestinal canal (Hector Mackenzie, E. L. Fox), is capable of exerting a marked effect on the tissues generally, and, when introduced artificially, of bringing about the rapid absorption of certain morbid products, the result of inactivity of this particular organ. In this perhaps we have a clue to the more accurate determination of the function of the thyroid gland.

REPORTS

TO THE

SCIENTIFIC GRANTS COMMITTEE

OF THE

BRITISH MEDICAL ASSOCIATION.

REPORT ON

THE EXPERIMENTS UPON THE INFLUENCE OF THE MINERAL CONSTITUENTS OF THE BODY UPON IMMUNITY FROM INFECTIOUS DISEASE.

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SECOND REPORT.

In the BRITISH MEDICAL JOURNAL of July 18th, 1891, we narrated some experiments which we had made with potassium chloride administered to guinea-pigs with their food so as to saturate them, as far as possible, with the drug. These experiments were made with the view of ascertaining whether such an artificial alteration in the mineral constituents of the body would alter its resistance to the attacks of an infectious disease. The results of our experiments showed us that saturation of an animal with potassium chloride in no way conferred immunity against anthrax; in fact, that the animals thus prepared died more rapidly than the control animals inoculated with the same virus.

In the present series we have tested the effect of feeding with salts of calcium, strontium, magnesium, and aluminium. The number of experiments is by no means large, but the results were so little satisfactory, and showed so little protective power on the part of any of these drugs that it seemed undesirable to increase the number. Appended are the details of the individual observations.

Calcium Chloride Feeding.—August 5th, 1891. Commenced feeding 6 guinea pigs with calcium chloride in bran. They were fed daily for twenty-three days, and then inoculated with spleen pulp in broth from a mouse dead of anthrax (obtained direct from a sheep by Dr. Martin). Inoculated also one guinea-pig which had been fed fairly regularly for about fifty-two days with calcium chloride bran. Inoculated at the same time 2 control animals: control 1 died between the forty-eighth and sixtieth hour; con-

³ Researches on the Minute Structure of the Thyroid Gland. *Philosophical Transactions of the Royal Society*, part 3, 1881, p. 591.
* Contributions to the Minute Anatomy of the Thyroid Gland of the Dog. *Philosophical Transactions*, vol. clxvi., part 2, p. 565.

¹ BRITISH MEDICAL JOURNAL, October 29th, 1892.

That is, one of the two separate lobes of which the gland consists in the sheep.