

Dock (Geo.)

GOITER IN MICHIGAN.

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## GOITER IN MICHIGAN.<sup>1</sup>

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VERY soon after beginning medical work in Michigan I had occasion to call attention in clinical demonstrations to the frequent occurrence of goiter, and within a few weeks I saw more cases than I had seen in several years, with more material, in either Philadelphia or Galveston. Visits to some of the most promising goitrous districts failed of realization for several years, but in the summer of 1894, through the kindness of Dr. E. H. Pomeroy and his associates on the medical staff of the Calumet and Hecla Mining Company, at Calumet, Michigan, I saw a large number of very interesting cases. Since then I have sent out question-blanks to a large number of physicians in all parts of the State. From the answers to these, and from my own observations on patients in my clinic, I have obtained the data on which the following remarks are based.

Records of goiter in the United States are curiously rare. Since the beginning of the century, following the monograph of Barton,<sup>2</sup> no general

<sup>1</sup> Read before the Association of American Physicians, May 31, 1895.

<sup>2</sup> A memoir concerning the disease goiter as it prevails in different parts of North America. Philadelphia, 1800.



survey of the subject seems to have been made, and even accounts of local endemics are rare. I have limited my own investigations to Michigan, although I have found from observation and inquiry that parts of Ohio and Indiana, still more the States (including parts of Canada) bordering on Lakes Michigan, Superior, and Huron, contain a good many cases. The prevalence of goiter in Canada has been mentioned by several writers. An important reference to the subject is contained in Dr. Osler's report on "Sporadic Cretinism in America."<sup>1</sup>

Goiter occurs in all parts of Michigan. It is most prevalent in the northern part (both peninsulas), but the southern part of the lower peninsula, especially the lower two tiers of counties from lake to lake, shows a large proportion. In Calumet, the physicians of the company kindly made a census and found fifty well-marked cases in a population of 14,000. At the Central Mine, a few miles away, my friend, Dr. John MacRae, found ten cases among less than 2000 people. In Adrian, in the southeastern part of the State, Dr. M. R. Morden reports thirty cases in a population of less than 9000. In Gaylord, Otsego County, Dr. N. I. Parmater writes that of all children born there, and reaching puberty, one-fourth have goiters. I have seen a number of cases from the counties directly adjacent to Otsego, but they are so sparsely settled that it is difficult to get definite information. I have not attempted to make a census of cases, as

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<sup>1</sup> American Journal of the Medical Sciences, November, 1893, p. 503.

many of my correspondents do not give figures. Fifty-two reporters give a total of 477 cases, not including the cases in the copper-region. The extent of the disease, as shown by the figures, does not compare with that in the goitrous regions of Europe, but is, nevertheless, a matter of importance and interest.

In a large majority of cases the goiters affect natives of America, and usually also natives of the district. Immigrants of all nationalities, and many of these are represented in Michigan, are frequently affected. Among others, the French-Canadians must be mentioned. I made a special effort to discover the conditions as regards Indians, many of whom live in different parts of the State. Among the older writers there is a want of harmony concerning goiter in Indians. This may be due to a fact I have noticed, that the red man seems to repel scientific investigation. Most of the reporters living near Indians could say nothing about them. However, Dr. R. B. Armstrong reports goiter as common among the Indians near Charlevoix. Dr. J. Wells Church, of Drummond, Chippewa County, says they have it, but rarely. Dr. H. B. Hatch, of Hart, Oceana County, has seen a number of cases; and other cases have been observed by Drs. G. C. Hafford, of Nahma, Delta County; E. B. Patterson, of Michigamme, Marquette County; John W. Decker, of Lake City, Missaukee County; O. L. Ramsdell, of Petoskey; C. N. Sower, of Pentwater, Oceana County; and L. A. Harris, of Vanderbilt, Otsego County.

In Michigan, as elsewhere, goiter develops most

frequently about puberty, next in early middle life. No age is exempt. No case has come under my observation in which the goiter was congenital, though I have known of several in very early childhood. Goiter frequently affects the parents, especially the mother, and also children. I have seen a family in which a mother and eight grown-up children had goiters.

As regards sex, females seem to predominate.

In most cases the goiters are comparatively small, not causing an increase of more than two or three inches in the circumference of the neck. Occasionally they are larger, and I am told of some "as large as a man's head," and of one that extends to the chin. I have never seen these myself, and even the largest native goiter I have seen would excite little interest in Savoy. Owing to this there is in most cases comparative symmetry in the growths, and I have seen but one case in which the tumor had a grotesque shape, so common in Switzerland. No histologic examinations have been made, but the tumors have all the physical characteristics of various forms of benign struma.

I have endeavored to learn of cases of cretinism, and, although I am told of one case, I have not seen it myself, and cannot vouch for the diagnosis. An interesting case coming under my own observation was that of an idiot girl, of eleven years, with a large goiter affecting the isthmus and both lobes. The goiter was of long standing. None of the physical peculiarities of cretinism was present.

No case of myxedema has come under my immediate notice. On the occasion of the report of a

case before the Michigan State Medical Society in 1894, by Dr. J. A. Wessinger, I spoke of the extent of goiter in Michigan and the advisability of looking up cases of myxedema; but so far as I can learn no other case has been reported. It is well known that in certain places where goiter is endemic myxedema is rare or absent.

Exophthalmic goiter seems to be unusually prevalent in Michigan, but without any evident relation to simple goiter. I have not included the latter in this study.

Goiter affects the lower animals almost always where it is common in man. Horses seem most frequently affected, then dogs, calves, and lambs. Cows and sheep do not seem to have goiter as often as the others. In a short time, on one day, in Calumet, I saw six goitrous horses and heard of a number of others. Most of the goiters were small and unilateral, not as large as a man's fist, but I was told of larger ones. Dr. Morden, of Adrian, reports what was perhaps a cystic goiter in a squirrel.

Of all the numerous factors supposed to be concerned in the production of goiter, the only one regarding the existence and importance of which there is now any probability is some unknown substance in drinking-water. That water is the cause of endemic goiter is one of the oldest and one of the most universal beliefs, but the peccant material has been differently conceived at different times.

All the older ideas, according to which goiter was thought to be due to lime, magnesia, or other mineral in the water, have gone the way of the glacial water theory and the "bronchin" of Vest, and

now, in accordance with current knowledge, the pathogenic substance is supposed to be either a microbe or a toxin. Nothing definite, however, is yet known in this connection. The relations of goiter in Michigan are such as to make all other causes doubtful, even if they had not been disposed of before. Here are no glaciers, no deep valleys, no long-continued mists and fogs, no carrying of heavy loads on the head, no inter-marrying. The cases come from all classes of society, but even in the poorest the hygienic conditions are no worse than in many places where goiters are never seen. Many cases that I have seen have lived amid unusually favorable hygienic surroundings. As for the geologic formation, sometimes looked on as important, we find goiters here as well on the drift as on the Laurentian, and in many intermediate formations.

In the cases of goiter that I have seen in Michigan a very large proportion of the patients have used well-water, and almost without exception my correspondents state that the same is true of the cases they report. Near Ann Arbor, where goiter is not so common as in some other parts of the State, one of my patients, a girl of sixteen years, developed goiter a few months after a new well was put in use, and I was told that several others who used the water got goiters about the same time. In response to my inquiry as to change of water and its results, Dr. N. H. Taylor, of Ludington, writes that goiter has become much less frequent there since lake-water was substituted for well-water. An opportunity for observing the effect of change of



water is now being given at Calumet. Formerly all drinking-water there was derived from wells, but recently an abundant supply has been obtained from Lake Superior, the inlet being in a place as free from contamination as possible. The result of this investigation must be awaited with great interest.

Although it is not within the scope of this paper to consider the clinical features of goiter, I wish to add what testimony I can to a diagnostic feature that does not seem to be generally appreciated. Guttman<sup>1</sup> has called attention to the fact that in the goiter of Graves' disease there is an arterial murmur over the tumor, which is not the case in other forms of goiter. Kocher expresses himself in accord with this view. For nearly four years I have paid attention to this sign, and have not yet seen a case of simple goiter in which there was a murmur, even in the case of very rapidly growing tumors. I have once heard a systolic murmur over the goiter of a horse. The growth was very hard, and I think the murmur must have been due to pressure. It had a blowing character, different from that heard over the goiter of Graves' disease, regarding which I agree with Guttman. In cases of Graves' disease from which exophthalmos is absent this sign can, therefore, I think, be used with advantage.

I do not intend to speak now of the medical treatment of goiter. The difference of opinion expressed on that subject by my correspondents is characteristic of a disease like goiter, which in some cases can be removed by the royal touch, and in others with-

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<sup>1</sup> In his *Lehrbuch*, and in the *Deutsche medicin. Wochenschrift*, 1893, No. 11, p. 254.

stands everything but the knife. I have made some trials with dried thyroid, kindly furnished me by Messrs. Parke, Davis & Company and by the Armour Company. The cases treated are too few to allow me to draw any conclusions, but lead me toward those reached by Bruns, Kocher, and others, viz. : that in young persons the remedy is useful, and should be tried further. The following observation, made on a recent case, is so interesting that I give it now :

A man of sixty-six years came to my clinic with a goiter which he said had grown in six weeks. Both lobes and the isthmus were enlarged, forming a symmetrical tumor, increasing the size of the neck more than two inches. The most remarkable thing about the tumor was that it was extremely hard, evenly nodular, and grew downward, so that the lower end could not be freed from the sternum and clavicles, and the growth hardly moved at all with the movements of swallowing. There was neither thrill nor murmur over the growth. The upper rings of the trachea were pressed in by the growth to a considerable degree. Iodin, internally and locally, including ointment of mercuric iodid, had been used without influencing the size of the tumor. From the alleged rapidity of growth and other features I suspected malignant disease, and advised the patient to remain under observation for a few days. He was put on gram-doses of thyroid powder three times a day. After taking this for two days without unpleasant symptoms, the patient was obliged to go home on account of business. The thyroid powder was stopped. A week later the man wrote that the goiter had disappeared, that the neck measured  $15\frac{1}{2}$  inches, one-half inch more than normal,

and that the symptoms of pressure on the trachea had disappeared.

The sudden disappearance of goiters in young persons, especially vascular goiters, is of course common. In this case, however, I think the medication must have had something to do with the change.

Although in most cases of goiter there are no symptoms and treatment is never asked for, in some unpleasant, dangerous, or fatal results occur, so that measures should be taken to check the disease, and the more important factors in prevention should be known.

In addition to improvement in the surroundings of the patient, when needed, there are two things to which attention may be drawn, sterilizing the drinking-water and removal of the patient to a non-goitrous district. The effect of change from well-water to lake-water, or river-water, should be more thoroughly tested. In the meantime all drinking-water in the goitrous districts should be boiled. For a long time I have advised goitrous patients to use boiled water, but, as they also used medical treatment, the effect cannot be determined. At the Congress of the Pyrenean Association in 1891 a memorial was addressed to the Minister of Instruction, in which the general use of filters was advocated. This may, no doubt, be of some additional value, but boiling alone can be practised more generally and more safely than the use of filters.

In my experience removal of a patient with a growing or intractable goiter to a part of the country where the disease is less common has been followed

by complete disappearance of the tumor, and some of my correspondents have had similar experience.

I wish to express here my thanks for the useful information furnished by a large number of correspondents impossible of enumeration in the paper.







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