JENKE (E.W.)

THE RELATIONS OF GOITRE TO PREGNANCY AND DERANGEMENTS OF THE GENERATIVE ORGANS OF WOMEN.

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NEW YORK:

WM. WOOD & CO., PUBLISHERS, 27 GREAT JONES STREET.

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Professor of Medical and Surgical Diseases of Women and of Clinical Gynecology in the Chicago Medical College.

"Rien n'est isolé dans l'économie vivante."

INTRODUCTION.

THAT the thyroid gland sympathizes with the uterus, and is profoundly affected by many of its conditions, is a fact that has attracted the attention both of ancient and modern writers.

Having myself seen many cases of enlarged thyroid gland, or goitre, occurring in young girls at about the age of puberty, and in nulliparous and child-bearing women, which could be directly traced to disorders incident to the establishment of menstruation, to functional or organic diseases of the uterus or to pregnancy, I was led to believe that the subject was deserving of attentive and careful study.

My interest was further increased by having, in my public clinic and in my private practice, a number of patients who exhibited in a marked degree the relations of goitre to uterine disorders. While treating these cases, I was struck so forcibly by some of the peculiar phenomena presented, that I was led to make considerable research in order to find parallel

cases; and while engaged in this pursuit, my interest was still further heightened by receiving a thesis from Paris[1] which contained much useful information on the subject of this paper; and being also the result of much research, it enabled me to turn at once to the works of some of those who have written most extensively and learnedly upon this subject. And yet I must confess great surprise at the meagreness of the details which I found, and, indeed, the comparative infrequency with which the subject was even hinted at; although I began with the earlier writers, and followed the subject carefully down to the present time. The thesis referred to, while not an exhaustive, complete, or in all respects an accurate review of the subject, nevertheless possesses merit and furnishes some very interesting reading.

A minute description of the thyroid gland is hardly necessary in this place; but a brief review of its structure and position may subserve a useful purpose in recalling its anatomical connection with other parts of the body.

This gland, then, is classified among the vascular bodies without ducts. It is situated at the upper part of the trachea, and consists, in general, of two lateral lobes connected by an isthmus which crosses in front of the three upper rings of the trachea. Each lobe is conical in shape, and measures about two inches in length, and three quarters of an inch in breadth; furthermore, it must be borne in mind that the gland is in intimate connection with the larynx, and partakes in its movements.

The proportion of the gland to the entire body diminishes with age; in new-born infants, it is as 1 : 300; in adults, it falls to the proportion of 1 : 1,800. It is supplied by four, sometimes five arteries, which are branches of the carotid and subclavian trunks; the fifth artery, when present, lies close to the median line of the trachea. The organ lies, moreover, in close contiguity to the great vessels and nerves of the neck. While ~~Much~~ larger in the angular neck of man, in woman it softens the projections formed by the cartilages and muscles of the subhyoid region, and assists, by its development, in rounding the neck and imparting to it its graceful form. But while in the great majority of cases this organ contributes to the

[1] Essai sur le goître dans ses relations avec les fonctions utérines. Par Victor Porcher, Th. pour le doct., Paris, 1880.

external beauty of the female sex, on the other hand it sometimes constitutes, by its hypertrophy, a veritable deformity.

The physiological import of the thyroid gland, so far from being known, is only guessed at. All that we do know with certainty is that it is a structure of much greater importance in the economy of woman than in that of man; being in this respect somewhat analogous to the mammary gland, for it is always larger, and is diseased much more frequently, in the female sex. This is a fact which has been recognized by all authors; but no one has as yet been able to establish by a precise law the inequality existing between the two sexes in this regard; but it is always very noticeable, especially in countries where cretinism prevails. This is true as well of the exophthalmic variety of goitre.

As regards the prevalence of goitre, it is stated on good authority that there are 500,000 goitrous persons in France alone; and in a single town, St. Aubin, near Rouen, one female in every sixteen of the entire population has goitre more or less developed. In Piedmont and Savoy, goitre is very rife; according to official reports published a few years ago, there were in these districts 18,462 persons with simple goitre, besides 3,909 cretins.

To illustrate the comparative frequency of goitre in the opposite sexes, we will give a few figures. Laycock[1] found in 551 cases of goitre, only 26 occurring in men. Dr. Luton,[2] in a series of 48 cases, found 45 of them occurring in women.

This predominance is also proved by medical statistics, and by the observations of physicians who practise in countries where goitre is endemic. In 1854, Tourdes[3] noted the great frequency with which goitre occurred in women at Strasbourg. Mitchell, in Scotland,[4] found 90 women among 100 goitrous persons.

Dr. Luton[5] finds that exophthalmic, as well as the other varieties of goitre, have a marked predilection for women; and

[1] Prof. Thos. Laycock, on the Cause and Nature of the Vascular Kind of Bronchocele and of Pulsations termed Anemic, in Edin. Med. Journ., 1863, Vol. IX., p. 8.

[2] Dr. Alfred Luton in Dict. de Méd. et Chir. Prat., Vol. XVI., p. 472.

[3] Dr. M. G. Tourdes: Du Goître à Strasbourg, Recherches statistiques et médicales—in Gaz. Méd., Strasbourg, 1854, t. XIV.

[4] Arthur Mitchell, on Nithdale Neck or Goitre in Scotland—in Brit. and Foreign Med. and Surg. Rev., 1862, Vol. XXIX., p. 504.

[5] Op. citat.

quotes Withuisen, who found 42 cases of exophthalmic goitre in women, to eight cases in men.

In the *New York Times* of Dec. 8th, 1880, was published the following: "Ohio papers say that goitre is prevailing in an endemic form in the southern portion of Montgomery County, that State, and causing much alarm. There are some forty (40) cases in one township, and 95 per cent of the victims are women."

These figures prove conclusively that women are more subject to the disease than men. Is there, then, some special reason to account for this fact? We can only answer that it lies in conditions from which men are naturally exempt: namely, in the uterine functions, which are connected with the development, not only of endemic, but also of sporadic goitre.

With these introductory remarks, I now invite attention to the further consideration of my subject, which I shall divide as follows: first, a brief historical review; second, etiology; third, pathology; fourth, a short consideration of exophthalmic goitre, and fifth, the treatment of goitre.

HISTORY.

The etiology of endemic hypertrophy of the thyroid gland has been more attentively studied than that of any of the other varieties of the disease.

In attempting to assign the cause of endemic goitre, most writers have agreed in making the geological conditions of the country responsible for the great majority of the cases; but when it comes to establishing the precise conditions, there is the greatest possible diversity of opinions. Some have attributed it to a humid atmosphere; others to altitude; others still, to the character of the water impregnated as it sometimes is with magnesian salts, or with fluorides and sulphides, and sometimes, also, characterized by the absence of oxygen or lack of iodine and the iodides.

The causes of sporadic goitre are much less obscure, for they are frequently to be attributed to the uterine functions. These functions sometimes impress upon goitre a particular course, so that they play a great part in the etiology of goitre in general.

Porcher[1] says that these particular causes were not mentioned by the ancient writers, and that even the modern

[1] Porcher, op. citat.

authors have failed to find precise indications upon the subject until we come to J. L. Petit. But this is hardly true, for in Aëtius' works[1] we find this interesting reference made to goitre: "A tumor occurring in the throat is called bronchocele, for the ancients called every tumor a '*cele*'; the name, therefore, is common, but the varieties differ. The tumor sometimes arises from dilatation of the blood-vessels in the part, as happens very frequently in parturition, when the woman in extreme pain has forcibly held her breath."

Petit,[2] at the beginning of the last century, in his treatise on surgical diseases and their appropriate treatment, recognized the influence of the uterine functions in the production of goitre, when he said that it happens frequently to women at the end of confinement; that, in consequence of the violent efforts which are made to expel the child, the thyroid gland swells and forms a considerable tumor. He adds that this disease sometimes occurs in young girls who have not yet menstruated, or with whom this natural evacuation is established with difficulty. "In both these varieties the tumors are sometimes made to disappear by strict attention to diet, and the proper administration of remedies, and especially the application of marine salt and sal ammoniac, either separately or together; these may be inclosed in a kind of collar covered with black taffeta. Finally, I have seen these tumors disappear when menstruation was established; and I have seen women cured during the pregnancy which followed the one that caused the tumor in question."

Paré[3] gives the derivation of goitre as follows: "Gongrona is a term used by Hippocrates and is equivalent to the French goüetre or goüetron, to the Greek bronchocele, and to the Latin hernia gutturis. It is a tumor of the throat, and the term is derived from the Greek *gongros*, which properly signifies a protuberance, or excrescence that grows on the trunks of trees, and is called by Pliny, *fungus*."

"Some goitres are painless," he says, "being composed of flesh having little sensibility; some are curable, and others incurable; some are small, while others are of large size and occupy the entire neck; some have cysts, while others have

[1] Aëtii Tetr. IV., Sermo II., Cap. VI., Frankfort, 1567.

[2] Ouvrage Posthume mis au jour par M. Lesne. Nouv. éd., corrigée. Paris, 1740.

[3] Ambroise Paré: Livre VI., Chap. IV.

none. In those which can be cured, an opening is made by cautery, or by the lancet, when the foreign matter is removed at once, if possible, or, if this cannot be done, at various times by the proper measures, then the ulcer will close up and cicatrize."

Among the earlier writers, Albucasis[1] is one of the few who gave any useful account of this disorder. We find in his works the following, under the caption of "Elephantiasis of the neck."

"This is a disease which appears in the form of a large tumor of the same color as the rest of the body. It frequently affects women, and may be natural or accidental, but is quite incurable. The accidental tumors are of two kinds—the one resembles a fatty encysted tumor, the other is like an aneurismal tumor, and is a very dangerous variety. It is not positively necessary to use a cutting instrument; if, however, you have carefully explored the tumor and are satisfied that it is of the nature of a fatty cyst, and that it has no adhesions to the blood-vessels, you may then incise it as you would an ordinary encysted tumor, and take it out with its envelope; but if it has no envelope, remove it entirely and then dress the wound in a suitable manner."

Coming down to more recent times, we find this description of goitre and its classification by Guillemeau.[2] "Goitre," he writes, "is a tumor which makes its appearance in the neck, between the skin and the tracheal artery, in which indolent flesh is sometimes contained, or a humor similar to water or honey, sometimes also hair or other foreign substances. There is another kind of goitre, the aneurismal, which is common in women during labor when they forcibly retain their breath."

Venette[3] prescribes the treatment of "gorge molette" which, he says, when occurring in young women, gives rise to suspicions of immoral life, or too great fondness of wine. Some women, he says, have tumors which hang down on the breast "like two pillows, and greatly interfere with the movements of the body."

In Morgagni's[4] writings frequent allusions are made to en-

[1] Chap. XLIV. La Chirurgie D'Albucasis. Traduite par Dr. L. Leclerc, Paris, 1861.

[2] Les Œuvres de Guillemeau. Paris, 1612, p. 186.

[3] Nicolas Venette, De la Génération de l'Homme. Cologne, 1716.

[4] Morgagni's Works, translated by Benj. Alexander, London, 1769, Book III., Letter L, Article 37.

largements of the thyroid, and attention is directed to the fact that they occur much more frequently in women than in men.

In Motherby's medical dictionary,[1] Dr. Hunter is quoted as having noticed that this disorder appears two or three years before or after menstruation is established, and that it sometimes "spontaneously disappears if the menstruation appears kindly."

As a specimen of many allusions to goitre, such as we find scattered through the current literature of modern times, we quote the following from the diary of John Evelyn, who observed goitre in 1646:

"Amongst these [the Swiss] inhabits a goodly sort of people having monstrous gullets or wens of flesh growing to their throats, some of which I have seen as big as a hundred pound bag of silver hanging under their chins, among the women especially, and that so ponderous as that to ease them many wear linen cloth bound about their head and coming under the chin to support it; but '*quis tumidum guttur miratur in Alpibus?*'[2] (Who wonders at goitre in the Alps?) Their drinking so much snow-water is thought to be the cause of it. But men using more wine are not so strumous as the women."

Since the time of the authors above mentioned, writers have for the most part quite neglected to take into account the influence of the uterine functions in the production of thyroid hypertrophy; indeed, this remarkable fact has scarcely been mentioned by many of them. Thus Boyer[3] and Nélaton,[4] after having pointed out, in their works on surgical pathology, the predominance of goitre in women, make no mention of pregnancy as a cause of it. The same is also true of Vidal de Cassis[5] in his treatise on pathology. The same is true of many American and English writers on general and surgical pathology.

Lebert,[6] who published in 1842 a voluminous memoir on the diseases of the thyroid gland, mentions the great frequency of goitre in the female sex, but does not notice as possible causes, gestation, menstruation, or the menopause.

[1] London, 1794.

[2] Juvenal.

[3] Boyer: Traité des Maladies Chirurgicales et des Opérations qui leur conviennent, 5e éd., t. VII., p. 61.

[4] Nélaton: Eléments de Pathologie Chirurgicale, 1854, t. III.

[5] Vidal de Cassis: Traité de Pathologie externe et de Médecine operatoire, 4e éd., Paris, 1855.

[6] Hermann Lebert: Die Krankheiten der Schilddrüse und ihre Behandlung. Breslau, 1862.

These points of etiology, however, have received some attention from other pathologists, and especially from obstetricians.

In 1842, in his treatise on the practice of medicine, Frank[1] mentioned this kind of goitre. We may also cite Prof. Grisolle[2] who, in his "Pathologie Interne," admits the troubles of menstruation and pregnancy as being well established causes of sporadic goitre.

Tardieu[3] makes note of pregnancy and the effects of parturition as causes of goitrous affections, in his manual of pathology and clinical medicine, and also in his dictionary of public hygiene and health.

Dr. Luton,[4] Professor in the Reims School of Medicine, in an article on goitre, has placed in the number of its predisposing causes, in woman, the original predominance of the thyroid gland in the sex, the difficult establishment of menstruation, puberty, pregnancy, parturition, and the menopause.

In 1845, M. Chailly Honoré wrote, in a treatise on the art of accouchement, that "swelling of the thyroid gland occurs oftener during accouchement than under any other circumstances."[5]

In 1850, Professor Natalis Guillot furnished an interesting communication to the Société Médicale des Hôpitaux on two cases of goitre in pregnant women.[6] He remarked, also, that P. Dubois had observed an example of the same at the Clinique de la Faculté.

Tarnier has noted, in his additions to the work of Cazeaux,[7] that hypertrophy of the thyroid gland is not rare during pregnancy, aside from all endemic influence.

In 1871, Dr. Lévêque presented a thesis[8] to the Faculté de Paris, which contains a large number of observations on goitre

[1] Prof. Frank: Traité de Médecine Pratique, 1842.

[2] Grisolle: Traité de Pathologie interne. Paris, 1866.

[3] Tardieu: Manuel de Pathologie et de Clinique Médicales, 4e éd., Paris, 1872, et Dict. d'hygiène Publique et de Salubrité, Paris, 1862.

[4] In Nouv. Dict de Méd. et de Chir. prat.

[5] Chailly Honoré: Traité prat. de l'art des Accouchements. Paris, 1845, p. 763.

[6] Natalis Guillot: De l'Hypertrophie de la Glande Thyroïde des femmes enceintes—in Actes de la Soc. Méd. des Hôp., 6e fasc., p. 470, et Arch. gén. de Méd., 5e serie, t. XVI., 1850.

[7] Traité théor. et prat. de l'art des Accouchements, 1867, 7e éd. rev. et annoteé par S. Tarnier, p. 448.

[8] Paul Lévêque: Des Injections Interstitielles iodées dans le goître. Th. de doct., Paris, 1872.

which were collected by himself or borrowed from various authors. Very many of these cases are manifestly of puerperal origin, and still the author did not establish a single conclusion from a pathogenic point of view.

Dr. Ollivier, fellow of the Faculté de Médecine, published in 1873 an able memoir[1] on the subject of chronic diseases of puerperal origin; this is a very valuable work and begins with a study of hypertrophy of the thyroid gland during pregnancy.

Dr. Lawson Tait,[2] of Birmingham, reported, in 1875, a number of observations on goitre in which he could find no endemic cause. These observations were of especial interest, from the fact that most of the patients had borne several children and, furthermore, in a series of twenty cases it appeared that the goitre was developed after pregnancy in all save one.

In 1876, Dr. Pastriot contributed an excellent thesis on the subject of persistent goitre depending on pregnancy and delivery.[3]

ETIOLOGY.

In studying the etiology of goitre, we shall examine, *first*, the influence of the menstrual functions and of the menopause upon its appearance and development; *second*, the influence of pregnancy and delivery upon this same affection, and *third*, shall devote some especial attention to the subject of exophthalmic goitre.

1st. Influence of *Menstruation* and *Menopause*.

No author has failed to remark that, in countries where goitre is endemic, its appearance is coincident, in most cases, with the arrival of puberty; and that the establishment of the menstrual functions plays a great part in the development of endemic hypertrophy of the thyroid gland.

It is also probably true that puberty may enter, to some extent, into the causation of sporadic goitre. Dr. Chauvin,[4] who has observed numerous cases of goitre in the Jura where this affection is endemic, says that there are cases which he

[1] A. Ollivier: Etude sur les Mal. chron. d'origine puerp. in Arch. gén. dé Méd., 6e serie, t. XXI., Paris, 1873.

[2] Lawson Tait: In the Obstetrical Journal of London, June, 1875, p. 203.

[3] Jean Pastriot: Etude sur le Goître persistant dépendant de la grossesse et de l'accouchement. Th. de doct., Paris, 1866.

[4] Chauvin: Du Goître dans le Jura. Paris, 1852.

attributes almost solely to the development which the various glands and the cellular tissue takes on at the period of puberty. He bases his idea upon the inefficiency of special treatment in such cases, and the spontaneous disappearance of the disease in after-years.

We believe that the disturbances which attend the establishment of menstruation, and perhaps a sympathetic relation between the thyroid gland and the genital organs, whose activity is awakened at this period, take very notable parts in the production of certain forms of goitres. In fine, although the pathogenesis of this phenomenon is at present obscure, these seem to be incontestable facts.

When menstruation is once established, it frequently happens that at each return of the menstrual period the thyroid gland becomes the seat of a fluxion, more or less marked, which disappears with the cessation of the catamenia. These periodical congestions are especially apparent in young women, whose thyroid glands are beginning to undergo hypertrophy.

The irregularities and disturbances of the menstrual functions, that is to say, dysmenorrhea and amenorrhea, have no less marked effects than puberty upon the thyroid gland. Under such circumstances, goitrous tumors may be developed with surprising rapidity. These tumors are generally firm and elastic, and may be extremely painful or quite insensible on pressure, but are almost always the seat of much discomfort during menstruation. They are, as a rule, quite amenable to treatment, and it is interesting to observe that these goitres frequently disappear spontaneously, and that those which develop with the greatest rapidity are often the first to disappear.

I have not deemed it necessary or important, for the illustration of my subject, to write out in detail all the cases of goitre associated with uterine disorders that have come under my observation. I will, therefore, summarize them as follows:

I have notes of fourteen cases of goitre occurring in young girls at about the age of puberty, each one of whom suffered from some form of uterine disorder. I can call to mind at least seven cases of like character of which I kept no record, but which were treated by myself for menstrual disorders, rather than for goitre, with the effect upon the thyroid gland,

in some instances of staying the swelling, in others of removing it altogether, while some of the patients remained too short a time under observation to afford valuable instruction.'

I treated one family in which there were eight girls, whose mother consulted me with reference to the enlarged necks of all but the two eldest. The family history was certainly peculiar, and the history of one of my goitrous patients will cover the cases of the remaining five.

Each one had a pronounced goitre prior to the establishment of the menstrual function, for which the routine treatment of iodine locally, and iodide of potassium internally, had been persistently tried for the older ones, prior to coming under my observation, and afterwards by myself for a time.

For a period of eight years I treated different members of this family, and had abundant opportunity of observing the progress of the goitrous tumors. In the mean time, some of these girls had developed into womanhood, had married and given birth to children. With some of them, the thyroid gland had been so enlarged as to constitute a deformity, which had to be concealed by the mode of dress; but in every case, without exception, the goitre disappeared during early womanhood. There was with every case more than ordinary constitutional disturbance in connection with the establishment of menstruation, during which time the goitres appeared; but after menstruation was once established, the tumors ceased to increase and gradually subsided and disappeared. The deformity of puberty no longer existed in any one of the family at marriageable age.

Another singular circumstance, in connection with the history of this remarkable family, is the fact that one of the two eldest girls, for whom I was not consulted, presented a marked case of exophthalmic goitre, which continued during the remainder of her life; she dying from pericarditis at the age of twenty-six years.

There came one day to my clinic three patients, the youngest fourteen, the next older fifteen, and the third sixteen years of

[1] Since this paper was sent to press, Dr. Lucas, of Felicity, Ohio, has written a letter to the author, of which the following is an extract: "In September, 1880, I was consulted by Mrs. M——, aged 30, the mother of one child, regarding various ailments which upon examination I found to be due to chronic cervical endometritis with all its attendant phenomena. Shortly after this she called my attention to an enlargement of her neck, saying that the condition had been present for several months. Knowing it to be a case of goitre, for which ordinarily but little can be done, I said nothing about it, but continued to treat the cervix with alterative applications, hot-water injections, electricity, tonics, etc. She improved rapidly, and while in my office on Nov. 12th, I inquired, 'How is your neck?' 'Oh!' she replied, 'the enlargement is all gone.' Of course, I was glad to hear it, but thought nothing of the connection between the uterine disease and the goitre until I learned of your paper on the subject."

age; the first and third being sisters. In each of the three patients I discovered a swollen neck and menstrual disorders.

The youngest had never menstruated, although the *molimen* had been pronounced at regular monthly dates for nearly a year. Coincident with the first symptoms of menstruation, her mother observed her neck swollen and sought medical advice; iodine had been applied locally, but without benefit. At each attempt at menstruation the neck enlarged somewhat, regaining soon after its usual proportions; but at no time did the goitre entirely disappear.

The second and third cases were similar to the foregoing one. In each, menstruation was irregular and scanty, the thyroid gland began to enlarge coincident with the first symptom of menstruation, and at each catamenial date was perceptibly larger than at any other time.

These patients continued to come to my clinic regularly for several months, and were treated only with reference to the establishment of normal menstruation. It was noticed that the local application of iodine to the thyroid gland served rather to increase than diminish its size. In each instance menstruation was after a time regularly established, and the goitrous tumors nearly disappeared.

I have also observed other cases in public and private practice, of enlarged thyroids, connected with functional and organic disease of the generative organs in women, at various ages, of which I have records of but four. One patient, who was treated during a period of years by different physicians, was spontaneously cured by the cessation of the menses, at the age of forty-six, and now shows no indication of having had a goitre, although at the age of forty it was quite large.

If the etiology of such goitres as are due to the influence of puberty is difficult of explanation, on the other hand it is quite easy to understand the phenomena which accompany the disturbances of menstruation.

Under these circumstances, the thyroid gland becomes the seat of a more intense congestion analogous to those which are produced in the various organs of the economy, where they furnish points of departure for supplementary hemorrhages, such as epistaxis, hemoptysis, hematemesis, etc.

Even if apoplexy of the thyroid gland does not always ensue in these cases, yet the repeated congestion of the gland ends usually by modifying its nutrition and leading to its hypertrophy.

In the same way another fact finds a satisfactory explanation, as regards that form of goitres which makes its appearance at the time of the menopause. Every one knows how

dangerous the plethora is which usually succeeds the cessation of the menses, because of the congestion occasioned in various organs of the economy. This condition may involve the thyroid gland, which being exceedingly vascular, may readily become gorged with blood.

2d. *Influence of Pregnancy and Labor.*

(*a*) *Pregnancy.*—Of all the goitres which have connection with the uterine functions, by far the most numerous are those which are produced or increased by pregnancy and labor.

Natalis Guillot was among the first of recent writers to call attention to enlargement of the thyroid gland during pregnancy. Simpson, too, notes the same fact, but as "of occasional and rare occurrence," while Holmes Coote says that it has been "not uncommonly noticed."

Furthermore, thyroid enlargement has frequently been observed in pregnancy, quite independent of the conditions usually considered favorable to its production, but it is rarely dangerous. Guillot, however, reports two cases under his own care which go to show that it may sometimes prove perilous to life itself.[1]

In the first case, a lady thirty years of age, of excellent health and constitution, found her neck becoming the seat of a slowly increasing enlargement during her first pregnancy. During a second pregnancy it increased again. Twenty-three years after, when M. Guillot saw her, respiration was greatly impeded. A few days after his first visit, the patient being nearly asphyxiated, laryngotomy was performed with immediate relief, but death ensued in two days.

The second case was that of a young woman aged twenty-nine, the mother of two children. Both respiration and voice were embarrassed, and she was subject to suffocative paroxysms—these symptoms had come on gradually from the time of her first pregnancy. She was admitted into the Necker Hospital, where one of the paroxysms of dyspnœa terminated fatally.

In the case of pregnancy, the product of conception exercises an irritative action, which, at first confined to the organ which contains it, soon affects to a greater or less extent all parts of the maternal organization, producing in the breast a useful physiological hypertrophy, but causing, however, a modification of nutrition, the persistence of which may result disas-

[1] Arch. gén. de Méd., t. XVI., 1860.

trously.[1] Thus the heart, as Dr. Larcher was first to observe, may become the seat of an hypertrophy, involving chiefly the left ventricle. The blood, the liver, the kidneys, the digestive apparatus, especially the stomach, the bones, the integument, and the nervous system, are all more or less profoundly modified.

With such changes as these, it is not at all astonishing that the thyroid gland receives its share of the changes induced by the growth of the fetus. "Not rarely, indeed," says M. Tarnier, "the thyroid gland hypertrophies during pregnancy from other than endemic influences. This hypertrophy is considerable, but produces no discomfort. Some women complain, however, of the swelling which deforms their necks. This enlargement of the thyroid gland diminishes somewhat after delivery, but it rarely disappears entirely."

But although the tumor generally diminishes or remains stationary after delivery, in other cases it increases in size, either progressively or by successive impulses, furnished by later pregnancies.

Let us now inquire into the nature of the relations which exist between goitres and pregnancy. Do we in this simply observe an effect of the suspension of the menses during gestation, and seek in a compensatory fluxion the point of departure of a goitre? We discard this idea altogether, understanding that in pregnancy the suspension of the menstrual flow is the general fact, and the goitre the exception.

It appears to us more rational, since we cannot grasp the law of the phenomenon, to admit a sympathetic fluxion making its appearance at the thyroid gland; a fluxion sufficiently pronounced and prolonged to alter the character of this organ, which remains hypertrophied.

(*b*) *Labor.*—Causes purely mechanical preside over the appearance or development of the goitre which results from parturition.

The repeated efforts of labor, interfering as they do with the returning circulation, produce hemostasis in the thyroid gland, and communicate to it an abnormal pressure sufficient to produce the consecutive dilatation and relaxation of the veins of the gland. The thyroid gland, in point of fact, in its

[1] I have, in a former paper, "The Causes of Sudden Death of Puerperal Women," Trans. Amer. Med. Assoc., 1878, alluded to the heart changes of pregnancy.

relation to the right side of the heart, fulfils an office similar to that of the spleen in its relation to the portal system. It is a reservoir always ready to receive blood whenever the circulation is obstructed in the superior vena cava.

This pathogenic influence is not exclusively confined to the efforts of parturition, for any other cause or effort producing sufficient swelling of the neck, by obstructing the venous circulation, is capable of producing a goitrous tumor.

Thus Dr. Cassan cites a case of indolent swelling at the left side of the thyroid gland, occurring in the person of a maiden lady forty-five years of age, as the result of severe exertion in raising a weight of forty pounds twenty-four hours previous.

Hahn and Brunet also speak of the influence that severe muscular straining may have in the production of goitre.

The custom that certain women have of carrying heavy burdens on the head has been responsible for many cases of goitre in Germany and France; also excessive muscular efforts, and especially the fatiguing labors of vine culture, which oblige the laborers to work in a stooping position with their heads bent down.

Dr. Luton says also that singers and performers on wind instruments are predisposed to goitre, while the cries and efforts of women in labor act in the same way. When we consider the violence of these last efforts, we can easily comprehend the important part which they play in the causation of goitre. Under these circumstances, the goitrous tumor affects two principal forms; the one in which it is produced immediately, and the other, more frequent form, in which the swelling, at first of slight extent, increases gradually till it attains considerable size.

The goitre which appears suddenly in the course of labor has been observed by different medical authors. In endemic countries, a woman may have a goitre which increases so slowly, and is so masked by fatty cellular tissue, that she is altogether ignorant of its presence, until all at once in the midst of labor it takes on an enormous development; but the phenomenon may also be exhibited in cases of tumors both old and large. It is probable that this kind of goitre is produced by the rupture of some vessels and the effusion of blood throughout the gland—a condition which is frequently termed thyroid apoplexy.

In connection with this effusion of blood, producing a true goitre, we ought to mention the sudden infiltration of air into the cellular tissue surrounding the trachea, producing the air goitre of Larrey.

The progressive form of puerperal goitre is much more common than the sudden form. In this form the tumor begins with the efforts of labor, and continues to increase more or less rapidly after delivery.

We have passed in review the series of genital functions as regards their connection with goitre; but perhaps it still remains for us, in order to make the subject complete, or as complete, at least, as the narrow limits of our work allow, to study the influence of coition and nursing upon the increase of the thyroid gland.

Coition, while it enters into the pathogenesis of goitrous tumors, seems, however, to have an especial effect upon the thyroid gland, as Lorain affirms in his article on nursing, in the Dictionaire de Médecine et de Chirurgie Pratiques.[1] "It is certain," he says, "that the necks of young girls swell after coition." The ancients exaggerated the importance of this swelling, which they regarded as a sign of lost virginity. Thus in Catullus we find reference made to a common practice among the ancients, of measuring the neck of the newly married woman after coition, in order to observe whether the thyroid gland had enlarged, and thus prove her moral character previous to marriage.

> "Non illam nutrix oriente revisens,
> Hesterno poterit collum circumdare filo."[2]

Again, nursing is not without its influence in producing goitre; many contemporaneous authors have noted its connection with this sort of tumor. Unfortunately, published observations on this subject, if there are indeed any, are few, and we regret that we must pass over a subject which might be the object of useful and interesting research.

3d. *Exophthalmic goitre*, as has already been said, occurs more commonly in women, and its phenomena are usually very well marked. The first symptoms are palpitation of the

[1] Tome I., Art. *Allaitement*.

[2] The nurse, visiting her again in the morning, will not be able to measure her neck with the string of yesterday.—CATULLUS EPITHALAMIUM.

heart and a rapid pulse, which often beats one hundred and forty times in a minute; together with this, various other signs of nervous debility appear. These symptoms are followed by enlargement and pulsation of the thyroid gland, with violent beatings of the carotid arteries, and finally, an unnatural prominence of the eyeballs begins to be perceptible, and in some cases, indeed, the globes of the eyes appear to protrude from their orbits. On palpation of the tumor, a vibratory thrill may sometimes be felt, and sometimes a musical bruit can be heard by means of the stethoscope.

Notwithstanding the apparent gravity of these symptoms, this disease is rarely fatal, unless associated with organic disease of the heart.

As for the etiology of the disease, various causes have been assigned; prominent among which are amenorrhea, dysmenorrhea, anemia, chlorosis, long-continued hemorrhage from piles, and bilious diarrhea. Dr. Stokes says that, in young women, mental anxiety and the effect of terror may produce it, and he cites a case of such a tumor occurring in a lady who had previously enjoyed excellent health. This author supposes that the disease is a form of cardiac neurosis which may lead to organic disease, and that the nervous excitement is possibly propagated to the arteries of the neck, as he thinks that their pulsation is more than can be accounted for by the force of the heart.[1]

Prof. Laycock[2] is of the opinion that the symptoms are due to neurosis of the cerebro-spinal tract, or rather of several vaso-motor centres in the spinal cord, while the tumor, he thinks, is produced by a lesion of a paralyzing kind of the trunk of the sympathetic.

Dr. Hanfield Jones[3] thinks that the fundamental malady is debility, especially of the nervous system, which, by affecting

[1] Dr. Pepper, of Philadelphia, in a recently published paper read at a meeting of the Pennsylvania State Medical Society, on exophthalmic goitre, under the head of symptoms writes as follows: "Menstrual disorders are among the most frequent. It would appear also that they occasionally act as the cause of exophthalmic goitre, since it seems probable that the prolonged reflex irritation from a diseased uterus acting upon a system predisposed, may serve as the exciting cause."—*Cincinnati Medical News* for November, 1880.

[2] British and Foreign Medical and Surgical Review, January, 1864.

[3] Proceedings of the Medical and Surgical Society, 1861.

different vasomotor nerves, gives rise to the various symptoms. M. Trousseau[1] taught that it is a neurosis having its proximate cause in a change of the vasomotor apparatus, and that anemia follows rather than precedes the characteristic symptoms. Arthur Wynne Foote[2] describes a severe case of exophthalmic goitre, occurring in a girl eighteen years of age, as the result of a violent moral impression. Immediately after a fright, she began to experience palpitations. Ten days later, swelling of the thyroid gland was appreciable, and exophthalmia appeared. At the same time that impressionability of its character was exaggerated, menstruation was completely suppressed, and the breasts, which were well developed, underwent almost complete atrophy. The tumor, after remaining stationary for several months, slowly disappeared under the influence of treatment.

Dr. Warburton Begbie[3] says that albuminuria is almost always concomitant with exophthalmic goitre, and that it is met with, not only in the advanced period of the disease when the heart is disturbed in its functions, but almost at the very beginning of the attack; as for the rest, it is a transient symptom and one which does not seem connected with organic disorders of the renal substance; but this remarkable phenomenon is observed: that while it is temporary, it is generally very abundant, so much so that one would almost think he had a case of Bright's disease with which to deal, were it not that the other signs of renal disorder are wanting. Dr. Geo. Johnson, of London, has also observed this phenomenon.

But even when albumen is quite abundant, the prognosis of the disease is not materially changed. In the opinion of this author, the nervous system which causes phenomena of congestion and fluxion about the eyes and in the thyroid body, in exophthalmic goitre, takes likewise a great part in the phenomena which are exhibited in the kidneys, and which are of the same class.

A case of exophthalmic goitre with insanity was detailed in the *Journal of Mental Science*.[4] This was the observation

[1] Clinique méd. de l'Hôtel-Dieu.

[2] Revue des Sc. Méd.

[3] Albuminuria in a Case of Vascular Bronchocele and Exophthalmos. Edinburgh Med. Journ., April, 1870, p. 80.

[4] Alex. Robertson: Journal of Mental Science, Jan., 1875.

of an individual affected with exophthalmic goitre, who, in the course of the disease, was seized with a very violent maniacal agitation which persisted till death. No autopsy could be made, but it was Dr. Robertson's opinion that the intellectual symptoms were dependent upon cerebral hyperemia. Two similar cases have also been reported; the one by Dr. Morrell Mackenzie,[1] the other by Prof. Meynert.[2]

In all the cases of exophthalmic goitre which I have observed, some menstrual or uterine disorder has always been present. I shall allude to only two cases in this essay.

One was that of a public patient, and was made the subject of several clinical lectures during the many months while she attended my gynecological clinic.

At her first visit, she was in her sixteenth year, the exophthalmos was of pronounced character, with a pulse ranging from 110 to 120 beats per minute; anemic murmurs could be heard in the carotids, and the musical bruit was distinct over the enlarged thyroid gland. The patient sought relief only for her deformed neck, seeming to attach but little importance to the other manifestations of her disease.

From her mother I learned that she menstruated for the first time at the beginning of her fourteenth year, and that the function remained perfectly normal for about one year. The girl was attending school, where she studied diligently, and when out of school exerted herself beyond her strength in helping to support the family.

From some cause attributed by the mother, as is usually the case, to exposure to cold, the menses suddenly ceased, since when they had not reappeared. For the last six months the neck had been enlarged, for which difficulty she had already sought medical aid. All the treatment had been directed to the goitre, while the amenorrhea had received no attention whatever.

On palpation, the goitre seemed to be of the vascular variety, giving no evidences of glandular growth. The girl continued to be a regular and faithful attendant at my clinic, so that I was enabled to study with considerable attention and care the relations existing between symptoms and disease.

Treatment was directed to the amenorrhea. The patient was ordered to be taken from school, and digitalis, ergot, mineral acids, bitter infusions, and, later, iron and strychnia, were prescribed. There was a gradual improvement in her condition, menstruation was restored, and after its periodical return was fully re-established, the goitre gradually disappeared and the eyeballs became less prominent; so that when I last saw her, there was no perceptible deformity save, perhaps, a slightly unnatural appearance about the eyes.

The remaining case of exophthalmic goitre was one of more

[1] In Trans. of Surgical Society for 1868. [2] Psychological Annals.

than usual interest to me, as the patient's parents were old acquaintances of mine, and her physician was one of my earliest medical friends; I was thus enabled to learn of everything in her history having any bearing on the case. When I first saw her, she was in her eighteenth year; at that time the eyeballs protruded so that the lids could not cover them, making it necessary to apply a bandage at night to protect the eyes from dust. The thyroid gland was very much enlarged, the pulse registered 140 beats per minute, and, during nine visits made in three days, I never found it less than this. The patient's body trembled and shook like one suffering from paralysis agitans, there was also mental and nervous hyperesthesia, the patient being extremely excitable and erratic, and altogether like one insane. The previous history was as follows: While engaged in study she overtaxed a system naturally frail and weak, paying no attention to ordinary hygienic rules. Family troubles of a peculiar character arose which deeply affected her. At this juncture she exposed herself carelessly at a menstrual period, causing total suppression of the menses. Following the initiation of amenorrhea, there was indication of chorea; then, two months later, it was observed that the thyroid gland was perceptibly enlarged, and a little later still, protrusion of the eyeballs was observed. For many months she received a careful treatment which had for its object the reduction of the thyroid gland; but, as might be expected, this was without avail. For eighteen months, so her physician informed me, he never found the pulse less than 120 per minute. The amenorrhea continuing to be a prominent symptom, treatment was instituted to restore the menstrual function. While her condition was at its worst, I was consulted, and I continued to see her, from time to time, during a period of two years. Without giving the details of the treatment, it will suffice to sum it up in a few words; digitalis, arsenic, ergot, strychnia, and iron were the chief drugs employed. The most pronounced effect was caused by the ergot, which exerted a controlling action on the heart of marked character and at the same time seemed to act as an emmenagogue. Change of scene, cheerful surroundings, and everything that could be done in the way of moral treatment was instituted. At first, only slight improvement was manifested; then later on, symptoms of returning menstruation appeared, but there was no decided improvement until that function had fully returned, and then the goitre began to decrease—the pulse became less frequent, and the eyeballs less prominent. After improvement had fairly begun, it moved on with rapid strides until the patient was restored to health. She has since married and borne children, and with the exception of a very slight unnatural prominence of the eyeballs, no one seeing her now would observe anything about her suggestive of exophthalmic goitre.

PATHOLOGY.

The thyroid gland is composed of glandular elements in the

form of closed vesicles contained in a cellulo-fibrous stroma, through which ramify a considerable number of blood-vessels.

Group I.—This comprises the simple goitres, constituting true thyroid hypertrophy or fleshy goitre. In this form the anatomical structure has remained normal, the vesicles are closely approximated, but are of equal size; the vessels are multiplied, but never congested; on puncture a little yellowish syrupy liquid flows out; the lobes have acquired a proportional but not marked development. It is this variety of goitre which is known in England as the "swelled" or "Derbyshire neck," and in France as "*grosse gorge*," or "*gros cou*."

Some authors include still a second variety, which is constituted by an amplification of each of the elements of the organ, as if you saw the normal tissue through a magnifying glass.

Group II.—This is a much more important group than the foregoing one, and comprises four varieties of goitre, each of which is characterized by the hypertrophy of one of the elements of the gland. The varieties are the following: 1st. Glandular. 2d. Cellulo-fibrous. 3d. Colloid, or cystic. 4th. Vascular.

First variety—Glandular goitre.—The multiplication of the glandular elements constitutes the distinctive characteristic of this variety, which presents, on microscopical examination, follicles filled with fluid and cells.

Second variety—Cellulo-fibrous goitre.—The cellulo-fibrous structure presents also alterations which are peculiar to itself. Its predominance over the glandular element constitutes the cellular goitre, which takes on a rapid development, and may acquire an enormous size. Schmaltz has well described this malady which he designates by the term "struma cellulosa." This goitre, he says, is formed of cellular tissue filled with a gelatinous liquid. The glandular portions are thickened, shrivelled, and atrophied. The cellular goitre has no well-defined limits; it is soft and yielding to the pressure of the finger, but it is not met with in adults except in a sporadic form, and may be attributed especially to the efforts of child-birth.

Dr. Bach had an opportunity to observe this anatomico-pathological form of goitre in a woman who died at the age of sixty in the hospital of Strassburg:

"This woman," he says, "was not born in a goitrous country; she tells us that, following confinement, her neck acquired an enormous size in the course of a year. The tumor occupied all the anterior part of the neck, and reached above the hyoid bone up toward the angle of the jaw, and descended thence as far as the sternum. The development was more considerable on the left than on the right side. At the autopsy which was made of this goitrous tumor, the liquid contained in the cells was not of uniform character. Some of the cells contained a serous substance, others colloid matter, or blood; in some places the capsules were, for the most part, not at all altered, but they were, so to say, disaggregated by the interposition of laminæ of degenerated cellular tissue. It was impossible to inject the arteries; the venous plexuses were greatly dilated, and, furthermore, fibrous tissue was found in some places."[1]

At other times, in place of the complete hypertrophy of the cellular stroma, hard whitish nuclei of fibrous tissue are found scattered through the gland filling up the follicles.

Finally, goitre in pregnant women may be caused by the hypertrophy of the fibrous and glandular elements which the gland contains. The case related by Natalis Guillot in 1858, to the "Société médicale des hôpitaux," belongs to this variety. We reproduce it here:

"The tumor was firmer in consistency than usual. This was due to the abundance of fibrous tissue forming throughout the tumor thickened and multiple septa of considerable size, but of less density than ordinary fibrous tissue.

The character of the tissue comprising these septa was the same as that attributed to fibrous tissue; it was represented by a series of rectilinear elements, of which some still bore traces of a nucleus. The elements crowded closely together, formed partitions and outlines of cells of unusual diameter.

These cells were in many places more than three centimetres in diameter, in others from .002 to .003 of a millimetre, which represented an intermediate series ranging from the normal diameter to the size I have just mentioned.

The walls of these cells were whitish and pearly in appearance, and although not very dense, they were in reality composed of fibrous tissue, the character of which the microscope revealed very nicely. The surface of the small cells formed by these envelopes of fibrous tissue was probably covered by

[1] Bach: In Mém. de l'Académie de Méd., 1855.

epithelium, because an appearance of this was seen in the globules contained in each cell.

But the larger cavities which deviate from the normal condition did not contain a single trace of epithelial cells; nothing was observed here but a series of transparent granulations, nucleated or non-nucleated, such as are ordinarily contained in the normal cells of the thyroid gland.

Except the size produced by this excessive accumulation of the anatomical elements of this thyroid hypertrophy, everything remained the same as in an ordinary thyroid gland.

The sole difference was the absence of epithelium in the cavities which were most modified in appearance. We are justified then in regarding this lesion of the thyroid gland as an hypertrophy of the fibrous and granular elements which constitute this organ."

We may also mention, in passing, the lardaceous thickening of the cellular structure which is an indication of its so-called chronic inflammation. Its partial or general ossification has been remarked by various observers. The bulletins of the Société Anatomique of Paris contain many examples of this kind.

Third Variety—Colloid or Cystic Goitre.—In the normal condition of the closed vesicles, they are filled with a colloid substance. When this substance begins to increase, the vessels which contain it dilate. When the goitre is opened, the thyroid gland is seen to be hollowed out by numerous areolæ. It is this particular condition of the gland that has been described under the name of colloid goitre.

If one of these dilated vesicles develops to unusual size in such a manner as to efface the others smaller than it, the goitre becomes truly cystic. We find an example of goitrous cyst developed under some peculiar circumstances, as reported by Dr. Luton.[2]

"The goitre was of notable size, forming on the right side of the neck a well-rounded tumor, which was quite movable and as large as a hen's egg, while the patient's emaciation made it appear still larger. In studying the tumor more closely, I observed that

[1] Natalis Guillot: Mem. cité in Arch. gén. de méd.

[2] Luton: Nouv. obs. d'injections de substances irritantes dans l'intimité des tissus malades. In Arch. gén. de méd., 1867, 6e serie, T. ix.

it was formed by a cyst, with fibrous walls containing a colloid substance. The microscope did not reveal a single defined anatomical element, but only the presence of cholesterine in rhomboidal tablets. I am sure that the tumor was at first solid; the puncture which I made to introduce the solution of iodide of potassium left no doubt in this regard. Afterwards the tumor underwent retrogression, and for a long time I thought it had disappeared; but probably the envelope of the goitre served as a point of departure for the secondary cyst which I found at the autopsy."

The goitrous cysts of Bach appear to proceed from three different sources:

1st. From a pathological blastema, the product of exudation and inflammation.

2d. From an apoplectic nucleus, passing through various forms.

3d. From the degeneration of one or more glandular capsules, caused by the colloid substance.

The cysts of the thyroid gland have a wall and a cavity, a sheath with its contents, the same as other cysts. The wall is sometimes delicate, sometimes thick; it is formed of cellular tissue, incrusted sometimes with calcareous or cartilaginous plaques. The cavity is filled with a liquid which may be transparent and colorless, or of various colors, as yellowish, greenish, or blackish; sometimes it is composed of blood which has undergone various retrogressive metamorphoses; sometimes it is purulent.

These cysts, generally unilocular, may occasionally become multilocular: in the latter case one of the cavities is larger than the others.

Fourth Variety— Vascular Goitre.—This term is justified by the development which the vascular system undergoes. The arteries are considerably dilated and sinuous, as is the case with aneurismal varices; the veins are swollen, and the vessels in general form a confused network. This is the sanguineous goitre of Tardieau, the aneurismal goitre of Richter.

Two kinds of goitres have been distinguished, according as the dilatation affects the arteries, forming aneurismal goitre, or the veins, forming varicose goitre.

In most vascular lobules, says M. Cornil, the vessels exhibit sac-like dilatations. If we remember, in addition, that they

have frequently been found weakened, we can easily understand that, under the influence of efforts, such as those of parturition, a blood-vessel may be ruptured, and the blood flowing out may cause what is known as thyroid apoplexy, which may give rise to the development of a cyst, as we have already said.

Perhaps we should make mention of the emphysematous goitre which Larrey calls the air- or pneumo-guttural goitre. It consists, according to this author, of one or more air-tumors which are formed at the front of the neck, especially at the sides of the larynx. These tumors may sometimes reach a considerable size, and may be due simply to the struggles that are made or the cries that are extorted by the throes of childbirth.

In Graefe and Walter's journal (Berlin, 1837), Heidenreich cites several observations of air-goitre, of which one especially seemed due to accouchement.

This air-goitre, not being connected with the cysts of the thyroid gland, is no longer classed by most authors with proper goitres, but is counted among the cysts of the neck.

After having explained these principal varieties of goitre, it should be said that it is a rare thing to find these types in a pure state, but the different varieties shade into each other so as greatly to modify the appearance under which the goitre is presented.

SYMPTOMS AND DIAGNOSIS.

The signs of a goitre connected with the uterine functions do not differ from those of an ordinary goitre.

These tumors are not usually as large as those of the endemic variety, and produce, much less frequently than the last, the accidents of compression, which are manifested by raucity of the voice, or sometimes by aphonia, wheezing, dyspnea, and dysphagia.

One important thing to observe is that the mental degradation that accompanies the endemic goitre is not observed in this; but the patients present a very satisfactory mental condition.

We ought, however, to note the progress of this affection which, when it is connected with menstruation and its troubles,

is sometimes transitory and periodic, sometimes slow and progressive, occasionally subject to periodic exacerbations which are signalized in advance.

As for puerperal goitre, it usually appears toward the third or fourth month of pregnancy, and in its development assumes several distinct forms, according to M. Ollivier,[1] who says:

"One form, the subacute and transitory goitre, develops slowly; sometimes, indeed, it comes without being noticed. It is not painful, and the woman usually arrives at term without having experieneed any difficulty in respiration. After delivery it becomes smaller, and after the lapse of some weeks or months no traces remain of it.

"A second form develops very rapidly, and may give rise to suffocation, but goitres of this variety are rare.

"Finally, there is a third form, the chronic goitre. Sometimes the swollen thyroid body remains stationary after delivery, or even increases somewhat with each successive pregnancy. At other times, instead of remaining quiescent, it continues to develop, and, at a period more or less remote from the pregnancy during which it had its origin, it increases rapidly in size, threatening to compress the trachea and produce suffocation and death. The two cases reported in the works of Natalis Guillot[2] are striking examples of this variety of chronic goitre."

These goitres, after a longer or shorter time, may inflame and even suppurate. In J. L. Petit's works we find an example of this mode of termination, as he observed it in a patient.

When the goitre is produced more particularly by delivery, it often happens that it begins instantaneously, but its subsequent progress does not differ from that of the preceding varieties.

The idea of a thyroid tumor of greater or lesser size, not inflammatory, especially when it is sporadic and occurs under the circumstances which we have passed in review, leads us to the following considerations:

First.—It cannot be a case of emphysema, for it does not on palpation give the characteristic crepitation.

[1] Porcher, op. citat., p. 58. [2] Op. citat.

Second.—We know that excrescences and ganglionic enlargements are not found in this situation.

Third.—We do not regard it as an acute inflammation of the thyroid body, for it is distinctively characterized by a diffuse swelling which is painful on pressure or movement, and is accompanied by a marked fever with the usual train of symptoms. However, an inflammation, severe at first, may terminate in induration and leave a swelling which differs in no wise in appearance from a goitrous tumor.

Fourth.—Aneurism of arteries in this region (carotids, etc.), although they may present phenomena of compression and suffocation quite analogous to those of thyroid hypertrophy, are easily distinguished by their pathognomonic signs: the movement of expansion, the vibratory thrill, etc.

Fifth.—We must remember that cancer of the thyroid body is of very rare occurrence, and is usually dependent upon a neighboring cancer. The scirrhus and encephaloid are the ordinary varieties met with, while the lancinating pains and the rapid propagation to adjacent organs which mark these varieties furnish us with valuable diagnostic aid. Prompt surgical intervention generally suffices to arrest their development, at least in the commencement of the disease. Swelling of the thyroid body in exophthalmic goitre, or Graves' disease, is one of the principal symptoms of this affection, the clinical syndrome of which is completed as follows: cardiac hypercinesia, arterial ectasis, and exophthalmia. But this disease which is produced, according to the theory of Prof. Jaccoud,[1] by the paralysis of the vasomotor, cardiac, and cervical nerves, differs entirely from simple goitre in this respect: that so far from being aggravated under the same circumstances as the last, it has even reached a cure under the influence of pregnancy, as attested by the observations of Charcot, Trousseau, and Corlieu.[2]

After having recognized the goitrous nature of thyroid hypertrophy, we ought to study the pathological anatomy of the case in order to determine its variety.

Its consistency, hard or spongy, determines whether it is a fibrous or cellular tumor. If we plainly discover fluctuation,

[1] Jaccoud: Traité de Pathologie interne, 5e éd., 1872.
[2] Corlieu: Gazette des Hôpitaux, 1863.

then the goitre is cystic. And finally, the vascular goitre may be revealed by its throbbing and vibratory thrill. While these may be mentioned as distinctive signs, it is well to remember that we rarely meet with tumors of the precise nature here defined. The varieties are generally combined in such ways as to render precise diagnosis very difficult.

TREATMENT.

1*st. Prophylactic Measures.*—Godelle and Valentin have made use of an inextensible cravat, which, by its constant pressure upon the thyroid body, prevents its expansion. In the same way Boyer has made use of bags filled with an inert powder, and Morand of a collar. It is impossible to say how useful these various appliances may be, but this much is certain, that the profession is slow to adopt them.[1]

According to the Prefect of Haute-Savoie, goitre is no longer endemic in ten of the three hundred and nine communes which compose this department where goitre was formerly very widespread. This happy state of affairs has been brought about by various hygienic measures, such as cutting down forests to render the atmosphere less humid; giving proper attention to the ventilation of houses; by using suitable water for drinking and domestic purposes, especially rain-water, to hold which large cisterns have been constructed.

Prior to 1818, goitre was exceedingly common in Valois, one of the Swiss cantons. In that year, from the bursting of a lake high up in the mountains, a valley near Martigny was devastated. Before the inundation, the soil of the valley was wet and marshy, and goitre and cretinism flourished; but the flood bringing down from the mountains three feet of alluvium, entirely changed the character of the land, and goitre and cretinism almost disappeared.

Goitrous school children have been required to take pastilles containing a weak decoction of walnut leaves, and as a result of 5,000 children subjected to this simple treatment, 2,000 have been cured, 2,000 more sensibly ameliorated, while only 1,000 have received no benefit at all.[2]

Hahn has remarked this singular fact, that at Luzarches, where goitre was formerly very common, among the women

[1] Porcher, op. citat. [2] Académie des Sciences, Paris, Nov., 1868.

especially, it now no longer exists, save in some families in which it is hereditary. He attributed this to the fact that the women and children are no longer engaged in the manufacture of lace, which in the last century was their chief employment. This kind of work obliged them to stretch out the neck as they worked their designs on the lace cushion, and hence the frequency with which goitre appeared among them.

Virchow, in a small work on the subject of school hygiene, says that goitre frequently makes its appearance in the persons of young girls above the age of eight years, after a year spent in study. Under these circumstances, the disease is probably due to the cramped position of the children as they bend over their books.

In much the same way, the regimental coat-collar, formerly in use in the French army, predisposed to the development of goitre in the soldiers; for since its modification there has been a very notable diminution in the frequency of its appearance.[1]

In this connection, we may notice a case reported by General Morin, at the Academy of Sciences, Paris, of two laborious young officers, who were so much occupied in copying plans that they remained bent over their work for many hours, with their heads inclined towards the paper, and their necks tightly confined by the high collars of their regimental coats. In both of these men, goitres were developed, which disappeared on quitting the work, but which reappeared whenever they attempted to resume their task.

Though not strictly in place, we may also mention a singular occurrence of epidemic goitre, which affected two hundred and eighty individuals out of fourteen hundred, composing the effective force of the St. Etienne garrison. The causes were doubtless forced marches in a mountainous country, and an insufficient supply of food. That forced marches and the ascension of mountains have the effect of producing congestion and subsequent enlargement of the thyroid gland, is abundantly proved by the army statistics of France.

There is one very important consideration which should not be lost sight of; it is this: that when a goitre is developed in a woman during pregnancy, she ought never to nurse her child, for nursing may of itself suffice to develop the affection.

[1] Reported by Dr. Michaud, in Gaz. Méd., Paris, Nos. 2 et 4, 1874.

In the same way, women who are affected with thyroid hypertrophy, ought to avoid everything which has a tendency to check the menstrual flow, such as violent emotions, or exposure to sudden changes of temperature.

2*d*. *Therapeutic Measures.*—The best of all remedies for the cure of goitre are, *first*, a change of climate to a country where goitre is not endemic, and *second*, a strict observation of hygienic and dietetic laws.

Of medicines, an endless variety has been proposed and tried with as various degrees of success.

The sponge was among the earliest to find favor in the treatment of goitre, and was first recommended, according to Vidal, by the Arabians who used the ashes. These have been administered under various forms, both internally and externally; and their use has been continued until comparatively recent times. In France, M. Bouchardat recommended that, in burning the sponge, care be taken that the ashes retain the reddish color of the unburned article. Ashes of *fucus vesiculosus* have also been extensively employed; they were used by Roussel under the name of *éthiops végétal*. The ash of sponge was frequently used as a topical application, and constituted the base of many electuaries, lozenges, and potions. The most celebrated men have not hesitated to make use of such preparations, and the names of some of them are still found in the Pharmacopeias of France. Of these, the "sency powder" obtained so great a reputation that the French Academy of Medicine demanded that the government purchase the secret of its composition and make it known to the public.

Iodine was discovered in 1813, and O. Coindel was the first to introduce it into medical practice for the cure of goitre; since when it has been extensively adopted by the profession, and with considerable success.

The hypodermic injection of iodine seems to give the best results of all, but it should only be employed in a case of humoral goitre. If the goitre contains many septa, the injection will scarcely penetrate them all, and it is also to be remembered that, in cases where there is a cyst, with thick, hard, and even cartilaginous walls, the injection may have no effect at all. When injected, the iodine serves not only to produce an adhesive inflammation, which causes the walls of the cyst

to adhere to each other, but it also softens the cystic walls themselves.

For interstitial injections with the hypodermic syringe, the formula used by Dr. Ritter is perhaps as eligible as any; it consists of the following ingredients:

Distilled water, ...	40 ccm.
Tinct. of iodine, ...	20 "
Iodide of potassium, . . .	1 gram.

The strength of this injection may be altered by increasing or diminishing the amount of the tincture of iodine to suit the exigencies of the case.

M. Bouchardat has recommended the following formula:

Tinct. of iodine, . . .	8 ccm.
Iodide of potassium, . . .	1 gram.
Camphor water, ...	15 ccm.
Rose water, ...	30 "

Others employ simply a saturated solution of iodide of potassium.

M. Monod advises the use of pure alcohol in place of iodine solutions; it is his practice to draw out a certain quantity of the cystic liquid, and replace it each time by an equal amount of alcohol.[1]

Ordinarily a single injection of one of the iodine preparations suffices for a cure; but if there is need of a second one, the course to be pursued is to wait until the fluxionary movement and the acute phenomena have completely disappeared.

Dr. Browne[2] reports six cases of goitre cured by hypodermic injections of iodine, together with the employment of a seton.

In goitres of a vascular character, it is necessary to do away with all employment of iodine injections, and have recourse to the perchloride of iron, which was successfully employed by Alquié of Montpellier in 1853, and which is also highly recommended by Dr. Luton.

Dr. Morrell Mackenzie has employed this substance in fifty-nine cases of cystic goitre, of which he reports fifty-six

[1] Porcher, op. citat., p. 45.
[2] Dr. Browne, British Medical Association Reports.
[3] Mackenzie, Lancet, 1872.

cures. The only case of death was attributed to the entrance of air into the veins.

Prof. Richter and Dr. Anger, surgeon of the Tenon Hospital, have injected with success a solution of the chloride of zinc into the vascular cysts of the thyroid gland.

Dr. George Johnson, of London,[1] reports a case of exophthalmic goitre, attended with albuminuria, in which a cure was effected by the use of bromide of potassium, digitalis, and iron.

Digitalis associated with camphor and bromide of potassium is considered by Dr. Moore as indicated in goitre arising from menstrual disorders.

Dr. Arthur Wynne Foot[2] reports a case of exophthalmic goitre, in which cure was produced by digitalis, associated with ergot of rye and sulphate of quinia, together with iron tonics. This author insists on the necessity of administering digitalis in large doses, a precept which Trousseau has already formulated.

Electricity has been very highly recommended in the treatment of exophthalmic goitre, due to lesion in the grand sympathetic, and it certainly seems to have been productive of most excellent results. Two cases of cure are reported by Dr. Benedikt.[3]

Another very interesting case is reported by Dr. D'Ancona.

The patient, a girl of 17 years, was afflicted with an exophthalmic goitre, her neck measuring forty centimetres. The menses had not appeared for four months. The eyes protruded so that the lids could not close, and the pupils were greatly dilated. Digestion was impaired, and the patient was emaciated, feeble, and extremely nervous. An electrical current produced by ten elements of a portable apparatus was employed in the treatment, and the poles of the battery were applied over the cervical ganglion of the great sympathetic on each side of the neck. This treatment, of which the patient was quite tolerant, was continued during five consecutive months, and was associated with the administration of moderate doses of Fowler's solution. Amelioration was at

[1] Dr. Geo. Johnson, quoted by Dr. Warburton Begbie, in Edin. Med. Jour., April, 1870, p. 80.

[2] Op. citat.

[3] Oesterr. Zeitschr. für prakt. Heilkunde, April, 1865. Noted in Dict. des Progrès des Sc. Méd., Année 1865.

[4] Giornale Veneto de Scienze mediche, No. 51, 1876. Noted in Dict. des Progrès des Sc. méd., Année 1877.

once apparent, appetite and strength returned, the bodily weight increased, the eyes became less protuberant, so that the lids could easily close, the circumference of the neck was reduced to thirty-five centimetres, menstruation was re-established, and the condition of the nervous system was greatly improved.

Dr. A. D. Rockwell, of New York,[1] is an earnest advocate of the efficacy of electricity in the treatment of exophthalmic goitre. With regard to the character of the current to be used, he says that "every physiological consideration, and all experience points to galvanism as pre-eminently indicated;" and adds that the application must not be local but general. In support of his assertions he details the accounts of several instructive cases occurring in his own practice.

Prof. Pepper, of Philadelphia, urges the use of injections of ergotine as extremely useful in the treatment of thyroid hypertrophy. He advises a solution of 96 grains of ergotine in an ounce of water, of which 50–75 centigrams may be injected every two or three days; this, he says, will harden the tumor and reduce its size.[2]

Iodo-tannin and iodoform are also highly recommended, as is also the double iodide of mercury as a topical application.

In a case of goitre where death was threatened by dyspnea, and in the treatment of which iodine, antispasmodics, and abstraction of blood had failed of producing any useful result, Dr. Shannon[3] claims a cure from the use of fumigations. For these he employed the following formula:

Powder of stramonium	3.54 grams.
Nitrate of potassium	1.77 "
Opium	.05 "

In goitre peculiar to women, the writer has observed better results succeeding the administration of muriate of ammonia than from iodine or any other single therapeutic agent.

Surgical Measures.—A woman with a slowly developing goitre does not usually seek counsel of a physician while she can conceal her deformity, or while it causes her little discomfort; so that, when she comes to us, it is usually at a period of the disease when, unfortunately, both prophylactic and

[1] Dr. A. D. Rockwell, in N. Y. Med. Record, Sept. 11th, 1880.

[2] Cited by Dict. des Progrès des Sc. méd., art. goitre, Année 1879.

[3] Dr. Shannon, in Brit. Med. Journal. Quoted in Dict. des Progrès des Sc. méd., Année 1879, p. 197.

therapeutic measures have lost the little efficacy which we usually attribute to them.

It is then necessary to interpose in a very active manner, and to institute an energetic treatment, always bearing in mind the anatomical and pathological character of the goitre to be treated.

Of the numerous measures to which surgeons have had recourse in the treatment of goitre, we will mention a few of the most prominent.

In the *London Lancet* of Dec. 2d, 1876, appeared an article by Dr. Marshall, suggesting the use of hair for drainage purposes instead of the ordinary seton. This method has been adopted by Lister, and in his hands has been productive of most excellent results. Following the example of Lister, M. D. Molière[1] has successfully employed this method in the treatment of goitre. Having a large fluctuating tumor to treat, he first explored it with a needle and finding that it contained a dark grumous liquid, he introduced into it an ordinary seton needle threaded with a few hairs. The liquid was drained away without producing any pain whatever, neither was there any appearance of fever, as is usual after theopening of these cysts. In less than a month the tumor entirely disappeared.

The ordinary seton has frequently been employed, and no doubt with good results, especially by Fodéré, Percy, Dupuytren, and Chelius.

Mr. Hey, of York, England, has also employed the seton with success. He reported a case of a young lady, 21 years of age, who had suffered from goitre since her earliest infancy. In this instance a skein of silk was used. At first there was no pain, and but little hemorrhage. For the first five weeks, there was little discharge and no material change took place. In the sixth week, there was fever and delirium which lasted forty-eight hours, then the tumor began to discharge a thin and very offensive matter, and the delirium subsided. Gradually the discharge became purulent, and finally all signs of the tumor disappeared.[2] Mr. Hey remarks that this operation

[1] M. D. Molière, Soc. des. Sc. méd., et Dict. des Progrès des Sc. méd., Année, 1879, p. 196.

[2] Provincial Med. and Surg. Journal, Sept. 10th, 1849.

was known a century ago, and was revived by Dr. Quadri, of Naples, in 1817. It was also tried by Mr. Hutchinson in 1819.

Dr. C. Rossander, of Stockholm,[1] describes two cases of goitre successfully removed by evacuation, which method he compares with extirpation. He regards this as an easy mode of operation, finds that hemorrhages can be controlled by tampons, that suppuration is not greater than after extirpation, that pus has no tendency to burrow, and finally, that in case of failure by this method, recourse can still be had to extirpation.

In vascular and aneurismal goitres, which are the seat of marked pulsation, ligature of the thyroid arteries has sometimes given good results. Thus Chelius successfully performed the operation four times in 1837. In 1852, Porta obtained success in one such operation, while Langenbeck was less successful.

Bonnet, of Lyons, has proposed operating by drawing out the tumor with the aid of a string, and then cauterizing it.

Ancelon de Dieuze, in a case of cystic goitre, produced beneficial results by means of drainage aided by emollient cataplasms and detersive injections thrown into the tumor through flexible tubes.

Ponnier extolled the use of caustics, but they have been rejected by Boyer, Rullier, and others who have given this subject special attention.

As regards extirpation, the dangers which attend it generally cause its immediate rejection from surgical practice; few surgeons, indeed, believe that the thyroid gland has ever been successfully extirpated, although cases are related by Desault, Roux, Gooch, Vogel, Theden, Hadenus, and others.

My friend and former colleague, Prof. W. W. Greene, of Portland, Maine, has extirpated the thyroid gland several times—more times, I have been informed, than any other living surgeon. His early operations were followed by recovery, but his later ones, I am of the opinion, have not been successful. I assisted him in one operation, of removal of the thyroid gland from the neck of a young girl, the patient dying with the completion of the operation.

[1] Rossander, Stockholm, in Hygeia, 1874, p. 663. Quoted in Rev. des Sc. méd., Vol. VIII., p. 756.

In severe cases, where suffocation is imminent, celebrated surgeons have proposed section of the sterno-cleido-mastoid muscle; but as this operation has given only moderately favorable results, tracheotomy has been substituted with advantage; it may be accomplished either with a bistoury, or where profuse hemorrhage is feared, with the galvano-cautery. This operation was described in the Academy of Medicine of Paris, in 1873, by Prof. Verneuil, who has demonstrated its superiority under many circumstances. Since then, following his example, many other surgeons have replaced the galvano-cautery by Paquelin's thermo-cautery. The application of this instrument to the operation of tracheotomy constitutes one of the most useful advances of contemporaneous surgical art.

Finally, in cases of hypertrophy of the isthmus of the thyroid gland, dyspnea may be produced by pressure upon the trachea to which it soon becomes adherent. To remedy the compression and resulting dyspnea, Duncan Gibb[1] has established the practice of division, or extirpation of the isthmus. At his instigation, this operation was twice performed by Mr. Carsten Holthouse, with a favorable result in each case.

Goitre not being as common an affection in our own as in many other countries, the opportunities for its clinical study are correspondingly meagre.

In looking over all attainable literature on the subject, I find that the preponderance of French writers is very marked, as one would naturally expect.

I have undertaken to give in this paper, in as condensed a form as possible, not only my own views, but also the views of others who, by reason of the opportunities which they have had of studying every phase of goitre, are enabled to speak authoritatively on the subject.

In bringing this essay to a close, the subject of the relationship of goitre to pregnancy and diseases peculiar to women may be summed up in the following

CONCLUSIONS.

1st. There is indisputable evidence that there may be endemic and occasionally epidemic causes producing goitre in men as well as women, yet the evidence is equally indisputa-

[1] Sir G. Duncan Gibb, in the Lancet, Jan. 23d, 1875, p. 120.

ble that every form of goitre occurs among the latter in a much larger proportion than among the former.

2d. The fact has long been established that in certain occult conditions of women, increased vascularity and enlargement of the thyroid gland may be produced as a consequence of some unusual excitement of the generative organs.

3d. Violent parturient efforts may cause the vascular form of goitre, but under the influence of pregnancy there may be gradual enlargement of the thyroid gland lasting for years; while, on the contrary, a goitre produced by one pregnancy is sometimes cured by a subsequent one.

4th. There are reasons for believing that, when goitre is caused by any disorder of the generative organs (excepting pregnancy), it is due more commonly to functional than to structural disease.

5th. It is not as a consequence of phlegmasias, or malignant diseases of the uterus or its annexes, that goitre is developed; on the contrary, the disorders which more commonly cause or precede goitre are fluxions, congestions, functional diseases of the pelvic organs, or those disorders of menstruation which are of systemic origin.

6th. As many goitrous necks among women are due solely to some derangement of their generative organs, the use of topical applications or remedies, however administered, unless made use of to remedy the cause, will be of no avail, and constitutes irrational and unscientific treatment.

7th. In the prognosis of goitre, we should always bear in mind the possible complications when the tumor is of considerable size; prominent among which are compression of the trachea, leading to dyspnea, or even dysphagia, and compression of the recurrent laryngeal nerve, producing harshness of the voice, and sometimes aphonia.

8th. When the goitre is not large and is manifestly dependent upon some derangement of menstruation, some functional uterine affection, or has suddenly developed in consequence of pregnancy or violent efforts in labor, the prognosis is favorable, although it is not certain that there will be a rapid disappearance of the deformity.

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