

quickly. The explanation of the cause of death is not easily given: for the child dies before any very obvious signs of exhaustion have had time to show themselves. Sometimes, but not always, convulsions occur. These exceptional features have naturally led to much discussion as to whether the disease is really syphilitic or not; and, in France especially, the one and the other opinion have each had its zealous supporters. All admit the peculiar features of the disease; and, excepting those who assert that it is to be cured by mercury, all admit that it is usually fatal. Not only is there usually an absence of ordinary syphilitic concomitants in the child, but the history of the parents is often very difficult to interpret. Such, at least, has been my experience. There is often an indistinct history of the disease in one or other parent; but it may be at a very long distance. Yet, in spite of these failures as to clear evidence, my own opinion is, as I have already said, to the effect that the disease is really almost always specific. I well remember a case in which, some years ago, I was consulted, at the suggestion of Dr. West, chiefly in reference to this very point. The parents, both of whom appeared quite healthy, had lost child after child within the first fortnight, with pemphigus on the hands and feet. The husband admitted that he might possibly have had syphilis before marriage; but his account of the course of his symptoms made it very doubtful. The infant which I saw had the usual conditions—blebs on the hands and feet, with dusky areolæ round them. It, like all its brothers and sisters, was a well grown infant, but, like them, it died at ten days old, after convulsions. Some years later, the surgeon who attended the family, and whom I met in consultation, was kind enough to inform me that conclusive evidence that the father was syphilitic had been obtained. Several almost similar occurrences have happened to me, in which, although at first we were obliged to doubt, all doubt was subsequently removed. Whilst, therefore, I am far from wishing you to believe that all pemphigus or bullous eruptions on the hands and feet of infants are syphilitic, yet I think that all ought to be suspected, and that, in the severe cases, those which threaten to end fatally, the suspicion will be found to be correct. As you are aware, it is a favourite doctrine of mine, that syphilitic forms of disease have their counterparts or types which are not so; that syphilis is an imitator rather than an originator. So, probably, there is the non-syphilitic prototype of infantile pemphigus; but the examples of it are so rare, that, if anyone should have the opportunity of investigating any such case in which the disease is well characterised, and ends fatally, he would do well to record them. Special attention should be given to the state of health of other children in the family. Often infantile pemphigus shows itself in several children in succession. As regards treatment, the evidence is, I think, quite sufficient to make it wise to at once give mercury. Although, as I have said, in my own experience, and in that of most who have written upon it, this form of pemphigus is very dangerous, and usually rapidly fatal, yet it is possible that our impressions are exaggerated on this head. A little fragment of evidence on this point fell to my lot this very morning. A married gentleman, who is under my care for a very slight manifestation due to syphilis many years ago, mentioned casually that his wife had been recently confined. "Is the baby well?" I, of course, asked. "Yes", he replied; "it seems thriving now, but it has had what the doctor calls pemphigus on its hands and feet". So far as was ascertainable, the pemphigus had not been supposed to be specific, and was disappearing without specific treatment. In reference to the peculiarities of infantile pemphigus, its occurrence on the extremities, and its tendency to end soon in death, we must remember that, of all the forms of skin-disease, common pemphigus is the most serious as regards risk to life, and that it almost always affects, though not exclusively, the hands, feet, and face. Unless its specific, arsenic, be given, it usually causes death. In the case which we have now in the wards, the man was rapidly failing in health before we gave him arsenic, and now he is cured of the eruption everywhere, excepting the hands, where a few of the bullæ, exactly like those of this infant, still persist in coming out. If the non-specific form of pemphigus be so severe, we cannot wonder that its syphilitic counterpart is so likewise. Probably in each instance the fact that a bullous eruption is produced, rather than any other type, reveals a peculiarity in the individual, an idiosyncrasy to which the danger must be held to attach. I cannot for a moment agree with the opinion of Diday, that the pemphigus of syphilitic infants is due rather to the cachexy produced by syphilis, than to the syphilis itself; for I have seen it repeatedly in children who otherwise seemed to be quite well.

Postscript.—A few weeks after these remarks were made, I was able, December 17th, to continue the history of the case by reading a note from Mr. Ilott, who had the mother of the child under his care. In answer to my inquiries, Mr. Ilott wrote: "The infant, now sixteen days old, is doing well, and there has been no fresh eruption for some

days. The forehead and nose are in a state of crust and scab. The hands and feet are nearly clear. The mother is a woman of bad character, who has borne two children to different fathers. She denies syphilis, but has many scars of specific ulcers in her legs. Her first child, two years ago, had syphilitic symptoms, and died at eight months. The treatment, in the present instance, has been by small doses of grey powder, but only once a day."

On January 12th, Mr. Ilott again kindly sent us the child. It was now puny, emaciated, with bad snuffles, and pain and swelling over several bones at their epiphyses. The pemphigus had long ago disappeared. There can be no doubt that it is the subject of syphilis.

[To be continued.]

THE ETIOLOGY OF ENDEMIC GOITRE.

By R. BRUCE LOW, M.D. Edin., S.Sc.C. Camb.,
Medical Officer of Health, Helmsley Rural Sanitary District, Yorkshire.

[Concluded from page 45 of last number.]

THE people who inhabit this part of Yorkshire are descendants of the ancient Britons, with a "dash" of Scandinavian blood in their veins. Until very recently, there was practically no railway communication in the district; consequently there was very little intermingling with others at a distance, or infusion of new blood. The people are, as a rule, hardy and robust. Their *physique* will compare favourably with that of other districts. For example, on the muster-roll of the local Volunteer corps are inscribed 176 names. The average height of these men is 5 feet 9¼ inches; the chest-measurement is 37 inches. Now the average height of the average Englishman is a trifle under 5 feet 8 inches, and the chest-measurement 35¼ inches; so that these men, typical specimens of our locality, are considerably above the standard of the ordinary Englishman. Another illustration will suffice. Seven men met a short time since in a country lane. One of them discovered that he, although measuring 6 feet 2 inches, was the smallest man present, the tallest being 6 feet 7 inches. We are told by writers on goitre that the people where it abounds are stunted both in body and mind. So far as the males are concerned, this fact seems to be contradicted by my observations in this neighbourhood. These same authorities assert that the women of goitrous districts are ugly, ill-formed, yellow, and unattractive; and that their sexual activity is almost suppressed, if not altogether absent, causing barrenness. I have asked the opinion of unbiased visitors here regarding the females they have seen, for example, coming out of church on a Sunday. These critics have told me, what I had already noted, that there is a large amount of beauty and natural grace among the young women, the fairness and purity of complexion being very marked. The birth-rate of the district is 35 per 1,000. I know of many goitrous women with large families (numbering as high as fifteen and even seventeen). So far from sexual impulses being suppressed, I regret to say that they are too exuberant among the young unmarried females of the poorer classes; our illegitimate births have been over 10 per cent. of the total for the last eleven years. Early caries of the teeth is of very common occurrence. There are a number of stammerers to be met with; but I have never seen an albino nor a deaf-mute in this neighbourhood. The house-accommodation much resembles that of other rural districts; it is deficient in quantity and quality. The cottages are often strikingly picturesque outside, but inconvenient and ill-ventilated within. I do not consider them, however, any better or worse than those found in districts where goitre is not endemic. The people are chiefly engaged in agricultural pursuits. The proportion of inhabitants to acreage in our sanitary district is about fifteen acres to each person. The dietary is much the same as in other rural parts. The poorer classes live on bacon, bread, and tea, with occasional additions. Many adopt the pernicious custom of drinking tea at every meal. The amount of drunkenness is not excessive, and I am told by the clergy that it is diminishing. The rainfall I do not consider great; last year (a wet one), it measured 34.43 inches. The wooded valleys are often full of mist when the high ground is clear and bright. This mist in the valley is called a "roke", by which name the same condition is known in Norway at the present day. The rainfall, for the most part, owing to the configuration of the surface, soon runs off, leaving the roads dry, and swelling the water-courses rapidly. In the wooded valleys, there is greater dampness, owing to the trees, which hold down the moisture, and prevent drying of the ground by the wind and sun.

Speaking generally, the drinking-water supply is pure and plentiful. It is mainly derived from three sources: 1, the running brooks; 2, the springs on the hillsides; 3, wells sunk in the rock or in the alluvium of

the plain. After careful consideration, I have selected six samples from the plain, the valley, and the hill, as typical representatives of the water-supply of the district. These samples have been analysed for me by my friend the well-known Yorkshire analyst, Mr. James Baynes of Hull, who has taken great interest in the inquiry, and has even repeated the analyses to verify the results. Below will be found, in a tabular form, the details of Mr. Baynes's analyses. In addition, I have several reports by different analysts on various waters; but, as each chemist has a system of his own, it is impossible to tabulate, for comparison, these combined results. I may, however, mention that, in one parish where goitre existed, the water-supply contained only 4.75 grains of total solids per gallon. This water was brought in pipes from a distant moor, and had deposited part of its mineral constituents *en route*. The water contained a small quantity of iron. The first specimen, marked A in the table, is taken from a parish situated at the extreme end of the plain, where the hills converge, shutting it in on three sides. The water-supply is derived from a spring which issues from the solid rock (lower calcareous grit) in a narrow wooded valley one mile distant. The water runs from the spring for a quarter of a mile in an open pebbly channel; it then flows into a small reservoir, from which it is piped to the houses. The supply is constant. I have notes of one hundred and twelve cases of goitre occurring in persons who drink this water. The specimen marked B is taken from a well twenty feet deep in the alluvium (clay, flints, etc.) of the plain. The village is wide and open. Each house has its own shallow well. I took this sample from the well of a house in which a goitrous woman lived. She was the mother of five goitrous grown-up daughters. The specimen marked C is taken from a well twelve feet deep in a goitrous village, situated on the crest of a high ridge which commands a splendid view of the country. This village is exposed to winds blowing from all points of the compass. The rock from which the water is obtained is the lower calcareous grit. The specimen marked D is taken from a village situated in a romantic valley, in which stand the ruins of one of the finest abbeys in Yorkshire. I may remind my readers that the monks of old took especial care to secure salubrious sites as well as lovely localities for their monasteries; yet, in this beautiful and healthy spot, goitre prevails. The sample was drawn from a spring in the centre of the village, and, therefore, in general use. The rock from which the water issues is the Oxford clay. The specimen marked E is taken from a lonely hamlet, on a bleak high ridge which overlooks the plain, and is swept by every wind. This water comes from the open moor, and runs in a channel about a mile long. The ground where the small stream begins is composed of "estuarine sandstones and limestones". The specimen marked F is taken from a spring issuing direct from a hillside where the rock is the calcareous grit. There is no village here; but persons living in a cottage close at hand, and using this water, are affected with goitre, as also are others dwelling in the scattered farms round about, and drinking water from the same source. The hill here mentioned forms the termination of the valley before referred to as being in the lias formation.

Analyses of Goitrogenous Waters by Mr. James Baynes, F.I.C., F.C.S., etc., Public Analyst for the City of York, the Borough of Hull, etc.

	A	B	C	D	E	F
	Grains per Gallon.					
Total solid residue ..	16.00	39.75	40.8	21.9	7.0	15.00
Chlorine .....	.70	2.30	3.5	1.3	1.2	2.00
Equal to salt	1.12	3.80	5.76	2.14	1.97	3.20
Silica .....	.76	1.60	.56	.56	.26	.56
Oxide of iron and alumina .....	.36	.46	.16	.76	.36	.26
Carbonate of lime	11.66	22.66	26.66	12.56	2.86	9.76
Sulphate of lime	Trace	6.40	5.80	4.05	Trace	1.90
Magnesia .....	.61	.83	.90	.65	.25	.50
	Parts per Million.					
	Degrees.					
Total hardness	15.00	37.00	34.50	18.00	6.00	14.50
Permanent hardness ..	5.50	13.00	10.20	7.70	2.50	5.00
Temporary hardness ..	9.50	24.00	24.30	10.30	3.50	9.50
Geological source of the water	Calc. grit	Alluvium	Calc. grit	Oxford clay	Estuarine sandstones and limestones	Calc. grit
Situation of source ..	Valley	Plain	Hill	Valley	Mountainous moorland	Hill-side
The water taken for examination from ..	Tap fed from a reservoir which is supplied by spring	Well, 20 feet deep	Well, 12 feet deep	Spring	Brooklet	Spring

From a glance at the preceding table, it will be seen that the water vary considerably in point of hardness, the minimum being 6 degrees and the maximum 37 degrees. It is evident that, as goitre is found equally prevalent under both conditions, the hardness cannot be the cause of the disease. The sulphate of lime, too, varies very much, from the merest trace to 6.40 grains per gallon. This, also, cannot be the noxious ingredient. I need not refer in detail to each constituent, as the table gives a very good idea of the comparative qualities of the different waters. There is, however, a larger proportion of oxide of iron and alumina in all the waters than is usually found. This fact tends to support Dr. St. Lager's views of the etiology of goitre; but it is difficult to understand how iron can be the deleterious element, since we are accustomed to give it so largely and so constantly in daily practice, with the best results. I have often given it when treating goitre, with perceptible benefit, especially those goitres associated with profound anæmia, as is often the case.

As a supplement to the facts already given, I propose briefly to add an analysis of the 260 cases of goitre which I have collected. I do not suppose that I have seen all the goitres which exist in my district. The large proportion are those met with in my own patients; but some of the cases are from notes kindly supplied by several of my neighbouring medical brethren. Out of the 260 cases, nine came into the district with the thyroid body already enlarged (three from Derbyshire, two from Wilts, one from Cumberland, one from London, and two from the West Riding of Yorkshire). Sixteen were males, and two hundred and forty-four females. One hundred and forty were dark, and one hundred and twenty were fair. In one hundred and forty-two cases, other relatives suffered from the same swelling; but, in one hundred and eighteen, this family predisposition did not exist, or, at least, it could not, from special circumstances, be traced. Ten cases were children under five years of age. Fifty-nine had a marked hæmorrhagic diathesis. I have already pointed out, in a short paper in the BRITISH MEDICAL JOURNAL (Goitre and the Hæmorrhagic Tendency, June 29th, 1878), that, in this district, there are a large number of flooders in childhood. At the time when I published the paper in question, I was not aware that the connection between goitre and *post partum* hæmorrhage had been noticed. Since then, however, Mr. Lawson Tait has kindly sent me a copy of his paper on Enlargement of the Thyroid Body in Pregnancy (*Edinburgh Medical Journal*, May 1878), in which he states that "there was a marked tendency to uterine hæmorrhage" in the majority of the twenty cases of goitre which he had noted. Frequent loss of blood is also a common complication of other diseases in this locality. I have noticed this particularly in enteric fever, where death has occurred in several instances from uncontrollable bleeding from the bowels. I had recently a convalescent from enteric fever, who spat and vomited blood, and passed it from his bowels and kidneys; the mother of this patient had a goitre, and was a flooder; and although his sister in her one confinement had not flooded, yet her recovery was much retarded by frequent bleedings from the gums, and also *per rectum* and *per vaginam*. With the greatest care, severe *post partum* hæmorrhage does occasionally occur in this district. For example: I have kept the uterus of a goitrous woman firmly contracted for three hours after delivery; but, on retiring to an adjacent room to rest my cramped hands, I have been hastily summoned, after a few minutes' interval, to find my patient fainting, and the bed full of blood. The flooding tendency, as well as goitre, is endemic in this district.

To return to our cases. In thirty-nine, there was a distinct family history of phthisis, several of the goitrous persons being affected with consumption at the time when I observed their goitres. Some authors have stated that phthisis is not found among goitrous people; but this opinion is not now generally held. In sixteen cases, there were distinct manifestations of the scrofulous habit, and in one family I found four young persons both goitrous and rickety. This last fact is contrary to what is held by some writers. Maffei (*Der Cret. in den Norisch. Alpen*) has written: "Where goitre and cretinism are endemic, scrofula is remarkably seldom found, and rickets almost never." In one of the scrofulous cases, the thyroid suppurated. Nineteen persons had heard disease along with goitre. In thirty, there existed neuroses. Two became insane; thirteen were very hysterical. In six cases, some member of the same family was insane. Four were more or less imbecile. I have seen only one "véritable cretin", a goitrous idiot, in this district. Although I believe that cretinism results from the concentration of the goitrogenous poison, yet I have seen no marked manifestation of its presence in this locality; and, with the exception of the one case just mentioned, I have not been able to verify the awful description of cretins given by French authors. "La face est hideuse, leur physionomie a une expression de stupidité indescriptible. Ils ont les pommettes et les mâchoires saillantes, le lèvres épaisses, flasques et retenant mal la salive, la bouche énorme, le nez écrasé, les narines élargies, les

cheveux rudes et grossières, les oreilles mal conformées, la peau épaisse, de couleur jaune terreux, les organes génitaux atrophies. Les dents carient de bonne heure; les membres inférieurs sont grêles, les jambes cagneuses, les pieds plats et larges." No one who knows the people who inhabit this part of the country will accuse them of abating one jot of the proverbial sharpness of Yorkshiremen; and all the world knows that the "Yorkshire tyke" is no cretin in driving a bargain, or in turning over the honest penny.

I have not seen an infant born with an enlarged thyroid gland; but a medical friend, recently practising in the West Riding, about six miles from the Derbyshire border, has sent me notes of three cases, in which goitrous women gave birth to goitrous infants. I have, however, seen bronchocele at as early an age as eighteen months. Most of my cases traced the commencement of their swelling to the first menstruation, or to pregnancy; in only one case was the enlargement said to have been first noticed at the climacteric period. In many cases, profound anæmia coexisted. It is affirmed by physiologists, that the blood of women has a larger proportion of leucocytes; and that, in pregnancy, these white blood-corpuscles are still more abundant. Now, it is believed by some that the function of the thyroid gland is concerned in the manufacture of the young blood-corpuscles. In pregnancy, there is increased work for the blood-forming organs; and, when the individual lives in a locality where goitre is endemic, if she have hitherto escaped, she develops the swelling so soon as the blood-corpuscle-forming function of the thyroid gland is overworked. With enlargement of the gland, there is apparently diminution in the formation of corpuscles—hence, perhaps, the anæmia and other symptoms. Thus, pregnancy is only a predisposing, not an exciting, cause of goitre. This hypothesis of the blood-forming function of the thyroid explains, in some respects, the greater immunity of males from this disease. The blood of males contains relatively more red corpuscles than that of females. The system of the male is not called upon to undergo the extreme tension and alteration of normal condition, which is the lot of the female in menstruation and pregnancy. This share of the subject offers a fertile field for future investigation.

To conclude the *résumé* of my cases: five suffered from exophthalmic goitre. I made a careful inquiry into three of the cases who came under my own immediate care (the remaining two being contributed by a friend practising in the district). The first was a married woman, who had hypertrophied heart, extreme exophthalmos, and a very large goitre. Her mother and four sisters were goitrous. Contrary to the usual experience, she was much benefited by treatment with iron. The second case had a hypertrophied heart, great anæmia, a small goitre, and marked exophthalmos. Her sister was goitrous, and her mother a flooder. She also improved under the use of iron. The third case had very severe heart-symptoms, a moderately large goitre, and very marked protrusion of the eyeballs. Her daughter and her nieces were goitrous. No treatment availed, and she succumbed to an attack of diarrhoea. It must be understood that these statistics are only approximative. There may be a larger proportion under each of the classes I have alluded to than stated; but those who have collected family histories among unlettered or uninterested people will recognise the difficulty which exists in getting precise and trustworthy facts. I cannot recall to my mind any case of a person, coming to live in this district out of a non-goitrous neighbourhood, contracting this disease. All the sufferers, so far at least as my observations go, have been born, or brought up from infancy, in the district. This is not in accord with the observations of some, who have seen goitres got after a period of from three weeks to six months' residence in an infected locality. The deduction from this is, that the poison, or source of the swelling, exists in a less degree here than in those other districts. Indeed, the enlarged thyroid gland here seldom attains a larger size than that of a melon; and we do not see any of those frightful swellings hanging far down on the breast, which are common enough on the continent.

This paper has already exceeded its original limits; I must, therefore, leave the rest of my material until another time. It may be asked: Why trouble ourselves so much about a disease which is rarely fatal, and one which is only confined to certain localities? This question will answer itself to those who have seen the distress and suffering to which goitre gives rise. It aggravates all respiratory diseases, adds to the difficulties of tracheotomy, and increases the dangers of administration of chloroform. By its pressure on the great blood-vessels of the neck, it may cause, and it certainly complicates, cardiac affections; and, for the same reason, obstructs the cerebral blood-supply—thus interfering with the nutrition of the brain.

In conclusion, it may be asserted that all the evidence points to potable water as the most probable source of the poison. This is well known to the crafty French conscripts, who, in order to avoid the hated military service, flock to the well-known goitrogenous springs in the

Briançon and other districts (St. Lager, page 191). A three weeks' course of these waters will enlarge their thyroids; and, anticipating their rejection, as the goitrous are exempt, they present themselves before the medical board; while their less cunning companions are marched away, possibly to swell the list of those whose bones are bleaching in the fiery glare of an Algerian sun.

The ancients blamed water; popular belief points chiefly to water, and the weight of medical opinion, with the results of recent research, plainly lead up to water. Having these indications before us, the investigator's course is clear; and time, together with patience, is alone needed to dispel the darkness which has so long enshrouded the etiology of goitre.*

THE CEPHALIC MURMUR OF ANÆMIA.

By G. A. GIBSON, M.D., D.Sc., F.R.S.E.,

Fellow of the Royal College of Physicians of Edinburgh, and Lecturer on Medical Anatomy and Physical Diagnosis in the Edinburgh School of Medicine.

IN the early part of last year M. Tripier, of Lyons, published an interesting memoir upon an important phenomenon which he observed in many cases, more especially in conditions of anæmia.

By means of an abstract in the *London Medical Record*, I brought his investigations before the notice of the profession in this country soon after the appearance of his paper.† In anæmia, and certain associated states, Tripier found that a murmur could be determined by auscultation over the cranium. He described it as always systolic in rhythm, never continuous, not modified by change of posture, but altered by pressure on the carotid arteries, and varying with the general condition of the patient. In a subsequent contribution‡ he has reconsidered the conclusions at which he previously arrived. He finds most of his statements fully supported by the evidence which he has accumulated, but sees reason to modify his former conclusion regarding the position of the maximum intensity of the murmur.

In his first paper, he described it as being most distinct over the temporal region, especially of the right side. But it had not then occurred to him to investigate the state of the orbit; and, since writing that memoir, he has discovered that on auscultation of the eyeball the murmur can be heard more clearly in that position, than in any other part of the cranium. He points out that the murmur is clearly of local origin, as it not unfrequently exists apart from any cardiac murmur, and cannot, therefore, be transmitted from the heart. It gradually gains intensity as the anæmic state becomes more profound, and when the patient improves it steadily diminishes.

The murmur over the orbit is heard at an earlier period than that over the temporal or other region of the head, and, as health is regained, it is longer in disappearing than that heard elsewhere.

Tripier regards this murmur as arising in the terminal portions of the internal carotid artery, and thinks that its maximum intensity over the orbital region is a strong argument in favour of such a hypothesis.

I am of opinion that the explanation given by Tripier of the mode of production of this murmur is inadequate, and I wish to advance another hypothesis which appears to have more evidence in its favour. Such is my reason for entering into a consideration of this question at present; and, in order to explain the phenomenon with greater advantage, I propose, in few words, to narrate an illustrative case.

Margaret A., aged 36, married at the age of 16, and now mother of nine children, consulted me lately at the New Town Dispensary. She complained of palpitation, with swelling of the legs and feet towards evening; she had but little appetite, and suffered from menorrhagia and leucorrhœa. There was no history of rheumatism nor of other antecedent malady, and the family history was good.

The patient's face was extremely pale, and the conjunctivæ, lips, gums, and tongue, were blanched in the highest degree. No impulse was visible in the precordial region, and there was no swelling or oscillation of the cervical veins. The apex-beat occupied the fifth intercostal space, two inches from the mid sternum. In the mitral area a loud blowing systolic murmur was heard, and there was an independent systolic murmur in the tricuspid area. Over the left auricle, the auricular murmur of Balfour was very distinct. A loud *bruit de diable* was audible over the jugular veins. It had a systolic augmentation of intensity,

* Since this paper was written, the woman first-mentioned among the exophthalmic cases, and whose mother and four sisters were goitrous, has given birth to a son, with an enlarged thyroid occupying both sides of the neck; the child is otherwise healthy. † *Recherches Cliniques sur le Souffle céphalique chez l'Adulte (Revue de Médecine, vol. 1, Nos. 2 and 3, February and March 1881).*

‡ *London Medical Record*, April 1881.

§ Note sur le Souffle Céphalique de l'Adulte considéré au niveau des Régions Orbitaires (*Revue de Médecine*, vol. 1, No. 10, October 1881).