LECTURES

ON

GOÏTRE: ITS PATHOLOGY, DIAGNOSIS,
AND SURGICAL TREATMENT.*Delivered at the Royal College of Surgeons of England.*

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LECTURE I.

Varieties of Goitre.—Endemic Goitre.—Distribution in Switzerland—in England—Alleged Causes—Climate—Physical Configuration of Soil—"Want of Air and Sunshine" Theory, Erroneous Nature of—Relation to Geology—Drinking Water the Chief Cause—Lime—Magnesia—Iron—Organic Impurities. Goitre in Lower Animals.—Epidemic Goitre.—Attempts to Produce Goitre Artificially.—Symptoms—Pressure Effects—Distortion and Displacement of Trachea—Effect upon Duration of Life.

[The lecturer began by describing the different varieties of goitre. All goitres were divided for practical purposes into five classes: 1, parenchymatous; 2, cystic; 3, fibro-adenomatous; 4, malignant; 5, exophthalmic. It was explained that all these varieties, with the exception of the last, ran very much into one another, so that mixed forms were common (see Fig. 1). Exophthalmic goitre, however, it was stated, stood quite apart from all others, both structurally and clinically. With regard to so-called endemic and sporadic goitre, it was considered difficult to know where to draw the line between the two. Probably in this country most goitres might fairly be considered to belong to the endemic class, but the endemicity being so widely spread over the country, while at the same time so slight, it easily escaped notice. The various alleged causes of goitre were then discussed. Instances were adduced to show that neither heat, cold, rainfall, nor rarity of atmosphere had any share in the production of the disease. The physical configuration of the soil upon which goitre was found was next considered.]

The Pennine range in Derbyshire and other counties of the centre and north of England is well known to be a great seat of goitre; less known but nevertheless very marked is the prevalence of the disease among the Cotswold Hills of Gloucestershire and neighbouring counties.

But, on the other hand, there are many mountainous countries in which goitre is very rare or altogether absent. Norway and the Highlands of Scotland may be cited as examples. It is not then the mountainous nature of a country alone that causes goitre to occur.

If one of the mountainous districts in which goitre is prevalent be examined more closely it will often be found that it is only in certain parts of the mountains that the disease occurs. Thus, in Switzerland, the higher parts of the Alps are much less affected than are the lower and, speaking generally, it may be said that goitre is more often found at the foot of a hill or mountain than near the summit.

[The distribution of goitre in Switzerland was here described, and it was pointed out that some of the highest inhabited parts of that country were free from the disease. The maximum amount of goitre was in the Cantons Fribourg and Berne, in some parts of which, according to Bircher,¹ the percentage of goitre among the recruits was as high as 80 or even 90.]

It has been asserted that goitre is not so prevalent in the most exposed parts of mountains, but occurs rather in the valleys upon the slopes of the mountains, and this is to a certain extent true. Probably nowhere in the world is the disease so common as it is in some of the deep valleys of North Italy, on the southern side of the Alps, at Aosta for example. In Savoy, at the western end of the Alpine chain, a similar distribution may be noticed. The Rhone valley is

a well known example. In our own country to a certain extent a similar prevalence of goitre in valleys may be noticed.

Now this prevalence of goitre in valleys, and especially in the valleys of mountainous regions has led to a widely accepted, but I fear an entirely erroneous, theory of the cause of goitre, namely, that it is due to want of air and sunshine. At first sight the theory seems plausible enough. No one who has visited the valleys in Switzerland in which goitre is so prevalent can have failed to notice that many of them are deep, narrow and gloomy. But if the depth, the narrowness, and the gloominess of valleys, and the consequent lack of air and sunshine in them were the real cause of the goitre, then we ought to find the disease prevalent in similar valleys in other parts of the world. But I venture again to cite Norway as a country in which such valleys abound. Yet evidence is quite wanting to show that goitre is at all common there.

Again, if want of air and sunshine were the cause of goitre, surely we ought to find it common among printers and others whose occupations compel them to work at night in crowded and often ill-ventilated workrooms. Miners, too, can hardly be supposed to get their full share of sunshine or of good air, but inquiry among miners and printers has not led to my finding that they are particularly liable to the disease. The horses, too, that work for years in mines, and never see a ray of sunshine are not, I am informed, affected with the disease. Nevertheless, horses as well as other domestic animals are, like man, subject to goitre in districts where it is prevalent.

Some of our textbooks state that goitre is common in the overcrowded and poorer parts of our great cities, but I am not aware that the statement rests upon any solid foundation of fact. Indeed, I can confidently state that in the East End of London, as well as in the poorer parts of most of the largest English towns, goitre is not nearly so common as it is in many country villages situated far more favourably as regards pure air and sunshine. In the village of Chacombe in Northamptonshire I found numerous cases of goitre. This village is situated in a more or less sheltered hollow among the hills, and it might be supposed that its position was the cause of the goitre. But a mile away is a farmhouse situated upon the very top of the hill in an exposed and open situation; in this house several members of one family have suffered from goitre; one of them actually died from suffocation caused by the disease.

Were it necessary to do so, I could cite many more similar examples pointing towards the fact that endemic goitre may be found in elevated and exposed situations where good air and sunshine are abundant. It seems clear that though certain valleys contain a great deal of goitre, yet the disease is quite absent from others which are equally deep, narrow, and gloomy, equally devoid of pure air and sunshine.

[Maps showing the exact distribution of goitre among the recruits in Switzerland and the geology of the country were here exhibited. It was shown that the distribution of the disease was most marked over the region of that great deposit of sandstones, marls, and limestones known as the marine molasse; other geological formations were also shown to be affected, although to a less extent. In discussing the relation of geology to goitre it was stated that a connection existed between the two only in so far as the former influenced the water supply. The difficulty and complexity of the subject were mentioned, and it was urged that hasty conclusions should not be drawn from mere observation of the distribution of goitre and the surface geology of the districts in which it was found. Allusion was made to the very different mineralogical and chemical composition of strata bearing the same geological name.]

The geological and geographical distribution of goitre in England was next considered. Statistical information upon the subject in this country was difficult to obtain. The chief sources of information utilised by the author had been (1) monographs already published, (2) facts related to him either personally or by letter by medical practitioners and others in various parts of the country which he had not himself visited; (3) observations made in the course of personal visits to numerous parts of England; information had been derived in some cases from local medical practitioners and from county hospital registers; in others from clergymen, innkeepers, and other inhabitants of the districts visited,

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¹ *Der endemische Kropf*, H. Bircher, Basle, 1883.

including large numbers of people themselves actually the subject of the disease.²]

I propose now to pass rapidly in succession over the various geological formations of England, and to point out briefly to what extent goitre is associated with each of them. The various formations will be taken in descending order. The tertiary rocks of England occur in two areas forming the London and the Hampshire basins. Taking the former first, the disease occurs very sparingly over the Bagshot sands in some of the villages between Aldershot and Chertsey, for example, at Windlesham, Bagshot, and Pirbright. In Essex it does not occur at Loughton or Chigwell, nor in the neighbourhoods of Harwich, Colchester, or Chelmsford. In the Hampshire basin it is said to occur at Romsey, but it is certainly absent from the neighbourhoods of Lymington, Poole, and Bournemouth.

Over the extensive region of the chalk goitre appears to prevail to a very slight extent, but tolerably uniformly. I found a few cases near Hatfield, Hitchin, and Hadham in Hertfordshire, and at Luton in Bedfordshire, and I have been informed that the disease occurs to a slight extent at villages in the north of Essex (Sible Hedingham, Wethersfield), and on the borders of Suffolk, especially in parts of the valley of the Stour (Cavendish, Melford, Sudbury, and Nayland). It has been asserted that part of Norfolk is affected. Some of the villages a few miles to the west of Swaffham are, however, certainly not affected. I am informed that goitre occurs also upon the chalk in the neighbourhood of Driffild, in Yorkshire. In the villages situated upon the chalk of the North Downs there is very little goitre, and the same may be said of those on the South Downs. The chalk is the source of such an abundant water supply, that it is worth while to draw especial attention to the rarity of goitre in connection with it, especially as it is even now asserted in textbooks that goitre is especially prevalent in the "chalky parts of England."

Coming next to the upper greensand and gault which underlie the chalk and come to the surface as a comparatively narrow band, extending from Devonshire to Yorkshire, and also skirting the Weald district of Kent, Surrey, and Sussex, we find that goitre is rarely present upon either of these rocks. The lower greensand area, on the contrary, is one upon which I have found a considerable amount of goitre. In the south of Bedfordshire it forms the low sandy hills in the neighbourhood of Ampthill, itself a known seat of goitre. I have seen cases at Aspley Guise, Ridgmount, and Woburn—all villages in this neighbourhood. Examination of the books of the Bedford Infirmary shows that a considerable portion of the cases of goitre treated there come from these villages and from others, such as Moulsoe, Eversholt, and Maulden, all similarly situated. I have been unable to find any goitre in many of the villages situated upon lower greensand in the south of Surrey, but it is said to occur at Haslemere.

With regard to the Wealden area, goitre appears to be tolerably common over the central and more hilly parts. Several cases came under my notice at Cuckfield, and I have heard of many others from other parts of the same area. I have reasons for believing that the disease is distributed tolerably uniformly, although not very thickly, over the whole of the central (Hastings sands) area of the Weald. I have been told that it is common at Horsham, but I have not personally examined this district. Villages situated upon the Weald clay appear to be slightly affected. I found several cases at Hadlow, and in neighbouring villages. From a similar district further to the east, a small number of cases have been reported to me.

I have made personal inquiries at most of the villages on the tract of country extending from near Eastbourne to Steyning, immediately north of the South Downs. These villages are situated upon greensands, gault, and Weald clay. I saw no cases of goitre and heard of only an occasional one

here and there. Those of the inhabitants who knew what goitre was agreed in saying it was much commoner further north in the Hastings sands area.

Underlying the cretaceous strata, and appearing on the surface in this country to the west and north-west of these rocks, comes the great series of the oolites. It has been stated by most of those who have written upon the distribution of goitre in England that goitre does not occur upon the oolites, except at Helmsley in Yorkshire. My own experience does not lead me to endorse this statement. I have, on the contrary, found that goitre is tolerably common upon the oolites, and is especially frequent in villages situated just at the junction of the oolites with the lias. In Somersetshire it is prevalent at Chinnocks, Stoke-under-Ham, and Chiselborough; the latter village has long been noted as a seat of cretinism. Further north I have found it at Corton Denham, and neighbouring villages. It is said to be common at Wotton-under-Edge in Gloucestershire. I have seen many cases at and near Stroud and in many of the villages situated on the oolites to the east of Cheltenham. Still further east I found that in many of the villages around Northleach, as well as in Northleach itself, the disease was very common. In Yorkshire, it is known to be common at Helmsley, and I have been informed that it is found also in several villages to the east of Easingwold.

[Details of the geological structure of the country around Yeovil, and also in Gloucestershire and other counties, were then given, and the influence upon water supply was pointed out. It was shown that goitre had been found in a large number of villages similarly situated at the junction of the oolitic and liassic formations, and no village upon this line that had yet been examined by the author had been found quite free from the disease.]

I do not wish to say that the amount of goitre upon this line is very great; it is not nearly as great as it is, for example, in Switzerland in the cantons of Berne and Fribourg, or in the lower part of the Rhone valley; still it is sufficiently marked to leave no doubt in my own mind that the geological structure of the ground and its influence upon the water supply are the cause of the goitre in these places. Whether the disease occurs to an equally great extent upon similar lines of junction of limestone, sand, and clay in the higher members of the oolite group, as, for example, at the base of the great oolite, I am unable to say, as I have not at present collected sufficient data to enable me to form an opinion.

The next formation that we have to consider is the lias. The upper members of this series lie immediately under the oolites, and goitre occurs, as I have said, just at the junction of the two, being most common apparently upon the sands that are now considered to be the lowest member of the oolites.³ Upon the middle lias the disease, so far as my observations extend, is less common. I have found a few scattered cases to the west of Chiselborough and Stoke-under-Ham. In the south of Northamptonshire and the neighbouring parts of Warwickshire, in districts where the oolites are absent, I have nevertheless found a considerable amount of goitre. The village of Chacombe, where goitre is decidedly prevalent, rests upon marlstone (middle lias). The Warwickshire villages of Warmington and Avon Dassett, where the disease prevails to a slight extent, are situated at the foot of hills of similar rock.

My friend, Dr. Bernard Rice, of Leamington, has kindly examined the out-patient books of the Wharnccliffe Hospital in that town, in order to ascertain the distribution of the disease in that neighbourhood. He found that out of 22 cases that had come from surrounding villages no fewer than 18 came from the liassic district to the east and south-east of Leamington. On the other side of the town is the new red sandstone, and only 4 cases came from this district. A village in which the disease appears to be especially prevalent is Napton, situated at the foot of a hill of marlstone, underlain and surrounded by lower lias clay and limestone. So far as I can judge, this district appears to be fairly typical of the distribution of goitre upon the lower lias. The disease is either absent altogether, or is thinly diffused over it. It must not be forgotten, however, that in many parts of England, as for example in the neighbourhood of Cheltenham, the lias is thickly overlaid with drift oolite, not marked upon an ordi-

² I desire to take this opportunity of expressing my cordial thanks to all those who have so kindly aided me in making local investigations. Especially am I indebted to Dr. Raglan Thomas, late of Llanelli; Dr. Walter, of Stoke-under-Ham; Dr. Skelding, of Bedford; Dr. Hooper, of Aylesbury; Dr. Adams, late of Ashburton; Dr. Ryan, of Northleach; and Drs. G. and H. Tayler, of Trowbridge; also to my brother, Mr. Edward Berry, F.I.C., who has made numerous water analyses for me, and otherwise given me much help; and my friend, Mr. Charles Cosens, for much assistance in photography and in other ways.

³ H. B. Woodward. *Geology of England and Wales*, 1887, p. 287.

nary geological map. The water supply in such regions is frequently derived from shallow wells in this drift, and not from the lias at all.

Upon the triassic division of the new red sandstone goitre appears to occur very sparingly, if at all. At Westbury-on-Severn, situated upon this rock near the lias, I could not hear of any. Upon the triassic rocks of South Derbyshire it appears to be almost absent—at least, such is the case at Findern, Newton Solney, Foremark, and Repton. Its scarcity upon the trias to the west of Leamington has already been mentioned. Over the large area in which this rock comes to the surface in Nottinghamshire the disease appears to occur but rarely.

The lower division of the new red sandstone is the Permian, often known as the magnesian limestone because a large portion of its rocks is composed of that material. It occurs in this country chiefly as a narrow band extending from Northumberland to Nottinghamshire.

It has long been a favourite belief that magnesian limestone is especially associated with goitre, but I doubt whether there is much truth in this. In part of the magnesian limestone area of Nottinghamshire I found goitre to be distinctly rare. In other parts it appears to be less common than upon the carboniferous limestone. It is said to be common in the neighbourhood of Knaresborough, in Yorkshire. I ought to mention that the term "magnesian limestone" is used, geologically, to denote a large series of marls, sandstones, and limestones, and that it consists by no means wholly of magnesian limestone in the chemical or mineralogical sense of the word. Magnesian limestone—using the term in the latter sense—is found in other rocks besides those of the Permian series.

The next series of rocks that engages our attention is the carboniferous. At the top of this series come the coal measures, and upon them goitre appears to occur to a moderate extent. The counties best known to me in which this formation occurs are Derbyshire and Yorkshire, and in both of them I found that goitre was fairly common upon the coal measures. I have also found it near Llanelly, in Glamorganshire. The millstone grit, on the contrary, appears to be much more free from the disease. I have been informed that at Ilkley goitre does not occur in places upon, or supplied by water from, this formation, whereas on the carboniferous limestone not far away the disease is not uncommon. At the Saltaire Hospital in one year, out of 780 applying for treatment, only 4 did so on account of goitre.

At Chapel-en-le-Grith in Derbyshire I was informed that cases of goitre are more often seen in the districts to the south-east of the town, where the carboniferous limestone prevails, than in other districts where millstone grit and Yoredale rocks are found. I was also told that since the introduction of a new water supply from the millstone grit goitre has become less common.

It has been stated that goitre is very common in the Peak district of Derbyshire in which the rocks consist chiefly of millstone grit and Yoredale rocks (grits, sandstones, shales, with thin earthy limestones). Upon inquiry at Castleton, on the southern edge of this district, I was assured that goitre was much less prevalent in the Peak

district than on the carboniferous limestone further south. The millstone grit formation is the source of water supply to so many of the towns in the north of England that the absence of goitre from it becomes a matter of considerable importance.

The carboniferous limestone regions of England have been described as the very hotbed of goitre, and I am inclined to believe that this is a tolerably accurate statement. Over the whole of this area in Derbyshire, but especially along the eastern border of it, I found numerous cases, for example, in the neighbourhoods of Cromford, Matlock, Yougholgreave, Bakewell, Baslow, and Stony Middleton. The same may be said of the region on the north side of Ashbourne, and I am told that the disease is also common over the similar districts in the east of Staffordshire.

In Somersetshire it occurs, I am informed, upon this formation at Clevedon, and I have heard of a number of cases upon various parts of the carboniferous limestone of the Mendip Hills. In Northumberland, on the other hand, it appears to be less common, but it is worth noticing that, in the north of England, this formation loses its markedly calcareous character and is represented largely by sandstones and shales. In the Forest of Dean goitre is said to be common, but I do not know whether upon the carboniferous limestone or upon the other rocks of this region.

With regard to the occurrence of goitre upon Devonian (and old red sandstone), my information is chiefly of a negative character, but such information as I have tends to show that the disease occurs but rarely upon either of them. At Ilfracombe and probably over the north of Devonshire generally, goitre does not occur. The same may be said of the western extremity of Somersetshire. I am informed also that in the neighbourhood of Talgarth, in Brecknockshire, the disease is not prevalent.

Of the silurian and Cambrian and pre-Cambrian rocks which form so large a portion of Wales, I have scarcely

Fig. 1.—Transverse section of goitre with trachea and œsophagus. Several adenomatous tumours are seen in various stages of formation.

any practical knowledge, and consequently cannot say much about the occurrence or otherwise of goitre upon them. The little information I have obtained, however, tends to show that here also goitre is rare. In Anglesea, for example, I am informed that goitre does not occur at all in the north-west portion in the neighbourhood of Amlwch, and is probably absent from the whole island. With regard to granite and other igneous rock, I believe that they are free from goitre. At least, I have never heard of any goitre upon them, and those districts of them that I have been able to examine, such as Widdicombe on Dartmoor, are quite devoid of the disease.

From the foregoing it will be seen that goitre is distributed over a very large surface of this country. Its coincidence everywhere with calcareous rocks, which are also very widely distributed in England, is one of the most marked features of its distribution. It is not only upon limestone but also upon calcareous sandstones that goitre is found. Whether it ever occurs as an endemic disease upon non-calcareous rocks is at least doubtful. The igneous, metamorphic, Cambrian, silurian, Devonian, Yoredale, and millstone grit rocks, and some parts of the coal measures and tertiaries, which are non-calcareous, appear to be mainly free from the disease.

[The nature of the water obtained from these rocks was briefly described, and the opinion was expressed that there was, speaking generally, some connection between goitre and the amount of mineral matter in the water. Mere hardness was not necessarily a cause of goitre; some waters were very hard, and yet did not produce goitre; on the other hand, an instance was given of a water in Derbyshire which showed only 7° of hardness, and yet apparently caused goitre. Bicarbonates and sulphates of lime and magnesia being the chief hardening ingredients of water, had naturally been considered by some to be the cause of goitre, but the author's investigations did not support this view. Iron as a possible cause of goitre was next discussed; numerous samples of goitre-producing water in Derbyshire and elsewhere had been tested, and found free from this metal. The fallacy of supposing that because a metal is contained in a particular rock it is necessarily present in water derived from that rock was pointed out.]

Allusion was made to the researches of Klebs and Bircher upon the micro-organisms present in certain goittriferous waters of Switzerland and Austria.

The occurrence of goitre among the lower animals in goitrous districts was mentioned. Reference was then made to the attempts of St. Lager¹ to produce goitre artificially. This observer fed different animals with sulphate of lime, carbonate of magnesia, and with other salts of various metals. The results were negative. Experiments with sulphide and sulphate of iron, given to mice, produced, he thought, slight swelling of the thyroid. Large doses of sulphate of iron given for four months to a dog produced slight enlargement of the thyroid, but "not enough to deserve the name of goitre." Other experiments by Bouchardat with lime and magnesia, and by Maumené with fluoride of sodium, both negative, were mentioned, as were also the experiments of Klebs and Bircher, who attempted to produce the disease in dogs, the former by injecting, the latter by feeding with, goittriferous water.]

Finally, I come to a set of experiments carried on for nine months by my brother and myself. Although our results, like those of previous observers, have hitherto been negative, I think it may be worth while to record them for the sake of those who may in the future carry on investigations in the same field. We took four sets of guinea-pigs, consisting originally of six in each set. The animals bred so rapidly that our experiments extended over several generations.

To the first set we gave a mixture of various salts of lime, magnesia, potash, and soda; the salts were those contained in the average analysis of waters from two districts in Auvergne,² where 19 and 10 per cent. respectively of the male population are affected with goitre. Allowing for the difference in size between man and guinea-pig, we gave the guinea-pigs five times as much of these salts as an average man would take who drank these Auvergne waters. This amount we gradually trebled in the course of the first three months. To the second set we gave sulphate of lime only, in quantity equal to half the total amount of salts given to the first set. This amount was doubled at the end of a month. The guinea-pigs were then taking a daily dose of sulphate of lime equivalent to 200 grains if given to a man. To the third set we gave carbonate of iron in doses equivalent in man to 10 grains daily. We gave this salt in the form of saccharated carbonate. The fourth set formed simply a control set of experiments, and received nothing but their ordinary food and drink. During the first four months and a half the salts were given in the solid form, ground into a fine powder, and mixed with the food. In the last four months they were given partly in this form and partly in solution in water. The animals were all weighed accurately every few weeks, and the doses of salts were regulated in proportion to the weights of the animals. After death each thyroid gland was weighed on a delicate chemical balance, and subsequently examined microscopically.

The results, although entirely negative as far as the production of goitre is concerned, tend at least to show that neither sulphate or carbonate of lime, nor carbonate of magnesia,

nor carbonate of iron are capable of producing goitre in guinea-pigs. That goitre can be produced by water has, I think, been shown by experiments that have accidentally been carried out on a large scale upon man himself. I refer to the outbreaks of so-called epidemic goitre that have been so often recorded. For example, a regiment of young soldiers has been quartered in a village, and after a few months, or even weeks, a very large proportion of the men have become goitrous. A town or village has received a new water supply, and shortly afterwards goitre has broken out in a large number

Fig. 2.—Larynx and trachea showing the distortion and displacement usually produced by unilateral goitre; the trachea is curved to the left and flattened obliquely by pressure inwards of its front and right walls; from a man, aged 49, whose goitre had existed since childhood.

of the inhabitants. Conversely, a village affected with goitre has changed its water supply, and goitre has ceased to occur. On the Continent there are noted goitre wells to which young men resort who wish to obtain exemption from military service. After drinking the water from these wells for a few weeks, they acquire goitres sufficiently large to enable them to obtain their wish.

I cannot now enter into detail with regard to these facts, but must refer those who desire further information upon the

¹ *Etudes sur les Causes du Crétinisme et du Goître Endémique.* J. St. Lager, Paris, 1867.

St. Bonnet près Chauriat and Beauregard l'Évêque, see Nivet, *Traité du Goître.* Paris, 1880. P. 272.

subject to the elaborate treatises of St. Lager,⁶ Baillarger,⁷ Nivet,⁸ Hirsch,⁹ Bircher,⁹ and others.

[The influence of habits of life, exertion, heredity, and intermarriage were then briefly discussed.]

Summing up, there can be no doubt that climatic and atmospheric conditions have little or no share in the causation of goitre. That want of air and sunshine has absolutely nothing whatever to do with it is equally certain. Habits, such as carrying weights on the head, violent exertion and the like, play but a secondary part in the production of the disease. That heredity is a cause of goitre is extremely doubtful. Intermarriage has almost certainly no share in its causation.

That there exists some definite relation between goitre and some poison in the soil upon which it is found is tolerably clear, and there can be no doubt that in the vast majority of cases drinking water is the vehicle by means of which that poison obtains access to the body. Such water is usually, if not always, derived from calcareous soils, but that it is probable that the goitre-producing poison is not a salt of lime or magnesia. It has not yet been proved satisfactorily that any salt of iron is the essential constituent. The same may be said of organic matter.

For my own part, I am inclined to believe that the cause will be found to lie in one of the mineral ingredients of drinking water, probably not a salt of iron, but possibly one of the alkalies or alkaline earths, not lime or magnesia. I put forward this belief, however, with the utmost diffidence and hesitation, feeling that at present such evidence as I have does not warrant me in expressing a strong opinion upon the subject.

[Some of the chief symptoms of goitre were then briefly discussed, and especial stress was laid upon the mode in which different kinds of goitre distorted and displaced the trachea (see Fig. 2). Reference was made to a former paper in which this subject had been treated more fully⁹. The effect of goitre upon the duration of life was briefly discussed, and it was concluded that in the great majority of cases the disease did not shorten life. In some cases, however, especially among young people, the pressure upon the trachea was enough to cause death. A long list of such cases that had been collected by the author was referred to. In elderly people, although goitre was less often directly the cause of goitre, yet it sometimes did shorten life very considerably by diminishing the calibre of the trachea so much that if bronchitis or other similar disease supervened, the patient had a much smaller chance of recovery.]

THE COMPLICATIONS AND SEQUELÆ OF INFLUENZA.¹

By FRANK NICHOLSON, M.D.LOND.,
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THE two recent epidemics have given everyone in practice the opportunity of seeing a large number of cases of influenza—a disease which was quite unknown to any but the older members of the profession. Late in December, 1889, this affection, which had been slowly spreading across the continent of Europe from east to west, and which already had reached England a few weeks previously, made its appearance in Hull, spread rapidly, and after raging for several weeks and affecting a large number of the population, slowly subsided, finally vanishing almost as suddenly and mysteriously as it had arrived. As there had been no epidemic in England since 1847, it was a reasonable hope that we might long be spared another visitation, but towards the end of March in this year it was too obvious that we had to face a further epidemic of influenza, which had apparently chosen Hull as the starting point for its English travels, and which promised to be far more widespread and serious than its immediate predecessor. In April many thousands of cases occurred in the town, but early in May they became less numerous, and the epidemic

subsided almost as quickly as it had sprung into existence. I am probably below the mark when I hazard the opinion that quite 40,000 persons in Hull suffered from the disease during the recent outbreak, whilst in many of the East Riding villages almost every house furnished one or more patients.

Though influenza makes a patient feel extremely ill, it is rarely fatal by itself, death, when it occurs, being due to some complication. The symptoms both in last year's epidemic and in the one through which we have just passed, though they varied considerably in different cases and even in the two epidemics, can easily be grouped around a common description.

The illness usually commences somewhat suddenly, with heats and chills and a tendency to shiver, but actual rigors are not common. Severe headache, chiefly frontal and in the backs of the eyeballs, attended often by giddiness, quickly follows, and there is great prostration. With these symptoms one usually finds severe lumbar backache and pains in the limbs, and often a hacking cough, whilst in some cases there is sore throat, coryza, and lachrymation. Occasionally at no period is the temperature raised, but as a rule the mercury rises quickly to 101° or 102° or higher. The pulse, however, often remains quite slow throughout. The tongue generally gets much coated, but is rarely dry in the uncomplicated disease, and there is complete anorexia and perversion of taste; drowsiness is not uncommon, and depression of spirits very usual. The patient refuses all food, and thinks the best champagne unmitigated filth, whilst his views of life are gloom itself. If no complication arise, the disease is quickly at an end, generally in three or four days, but convalescence is always tardy, the physical weakness lingering for a long time, and the patient remaining flat and depressed. I do not find in the textbooks any very full account of the complications and sequelæ, and, as these are exceedingly important, some little consideration of them will be no waste of time.

Those affecting the respiratory organs, alike from their frequency and from their often fatal character, take the first place. The most common of all is bronchitis. It may be only trifling in degree, affecting the trachea and larger tubes; but there is a great tendency for the inflammation to creep into the smaller tubes, placing the patient in the greatest peril, and too frequently proving fatal, especially in the very young or the very old, and in those who previously had been out of health. I have seen a great many severe cases of this complication, and in contrasting it with an ordinary bronchitis have remarked: (1) That the cough is of a specially irritable and hacking character, and is peculiarly troublesome; (2) that the expectoration soon becomes copious, the sputa consisting of greenish-yellow masses, which are particularly thick and tenacious, and cling with great pertinacity to the receptacle, and when floating in water often resemble, as Dr. Peacock has pointed out, some of the large oolitic limestones; (3) that there is often very considerable difficulty in coughing up this thick sticky secretion, which is very apt to clog the bronchi; (4) that dyspnoea is often very urgent, the breathing being of a peculiar blowing and panting character; (5) that on physical examination the front of the chest reveals but few rhonchi, whilst at the bases posteriorly moist râles are most abundant, the area over which they are heard steadily rising in height as the disease advances; (6) that it is exceptionally rebellious to treatment; and (7) that on *post-mortem* examination the lungs are extremely inflated, and, instead of collapsing when the thorax is opened, seem actually to protrude.

The next most frequent complication is pneumonia, which may be either lobular or lobar. In the former it generally assumes a slow creeping character, and is usually grafted upon an existing bronchitis. Lobar pneumonia is often met with. I have seen a good many cases, and have observed in contrast with an ordinary acute pneumonia: (1) That the physical signs are often less pronounced; there is frequently not that large area of wooden dulness or loud tubular breathing that is commonly met with; (2) that the sputa less commonly are characteristic—rusty sputa are exceptional, the tinging, if any, being ill marked; (3) that dyspnoea is often an urgent symptom, and frequently of a deep and laboured character; and (4) that there is generally, combined with the pneumonia, a considerable amount of bronchitis, far in excess of what is usually seen in acute pneumonia. This

⁷ *Enquête sur le Goitre et le Crétinisme*, Paris, 1873.

⁸ *Geographical and Historical Pathology*, 1885, vol. ii.

⁹ *Path. Soc. Trans.*, 1890.