Graduation Thesis.

On the Etiology and Pathological Relations of Bronchocele.

by

"Aberdare."

April, 1885.
In writing this thesis, it is my purpose to describe the associations which I have observed in connection with pathological conditions of the thyroid gland. I have been induced to do so, owing to the great number of cases of bronchocele, which have come clinically under my observation. The subject will be treated principally from an aetiological point of view, since I believe that the relations of goitre, as exhibited in Aberdare Valley, South Wales, throw a little light upon it.

Situated in a region which renders its surgery often a matter of great difficulty and danger; involved in obscurity in regard to its physiological functions; and at the present time surrounded by pathological relations, the nature of which is not yet understood, the thyroid body presents a subject of some little interest. It is liable to a few diseases which affect other organs of the body in a similar manner, in which the special interest depends, not so much on the presence of that individual disease in the thyroid—nor on anything intrinsic in the disease itself as on the important position to structures round about, in which the thyroid is placed, the special peril which that which frequently imparts to the patient.
Thus, there was lately reported in the British Medical Journal, a case of sudden death which took place in a woman, who was the subject of a haematoccele of the thyroid. Considering the structure of this gland, the presence of haematoccele is not to be wondered at, but in this case a sudden haemorrhage taking place into the cyst, led to the death of the patient from compression of the trachea.

Hydrocele is also met with not so commonly other forms of tumours. I remember a case of very enlarged right lobe of the thyroid, which was treated in the Infirmary by Prof. Bannard, which was considered to be of malignant nature. Cases have been reported of secondary tumours, growing simultaneously in various tissues, that had as a precursor, adenoma of the thyroid (Streain's Dictionary of Medicine, art. on Diseases of Thyroid.) True carcinoma also occurs, but rarely. It may be primary, or it may invade the gland from neighbouring structures, or it may be secondary.

All these diseases, along with the formation of calculi, the presence of hydatid cysts, enlargement from inflammation, are not at all uncommon, e. form the category of the less frequent affections of this organ. As regards their pathology, they are as equally known as in other parts of the body. To these I shall again allude in any special manner.
The most common condition of the thyroid, is its so-called hypertrophy, which occurs in goître (endemic & sporadic), in exophthalmic goître, & associated sometimes with catarrh. It is not really a hypertrophy in the proper sense of the word, in the great majority of cases, the increase in size being in the first place due to an alteration in the blood supply & afterwards from the consequences of this on the nutrition of the gland.

Gigantous enlargement of the thyroid, in the Aberdare Valley, South Wales, & I shall give a short account of the appearances which it presents in this region & discuss the probable causes of its development.
The explanation which has as yet received most credence is one which refers to the drinking water, as the source of that which excites the growth of the tumour. The special constituent to which this power is attributed being the compounds of calcium held in solution by the water. Associated with this cause is also the presence of special geological formations. I hope to be able to show that both these theories are probably erroneous in regard to the disease in Britain. Other causes have of course been brought forward, these will be noticed in the course of the paper. These remarks, as will be understood, do not apply to exophthalmic goître, which as far as my
experience goes, is not specially present in an otherwise goitrous locality. Enlargement of the thyroid, apart from the occasional disease summarized before, is most frequently goitrous. Goitre is defined as "simple hypertrophy, or cyclic goitroid, or fibro-cyclic enlargement of the thyroid gland." (Quain's Dictionary) cases of it are occasionally found sporadically in all parts of the world; but it is remarkable that in certain localities, it is endemic, a varying percentage of the population being always attacked. These goitrous regions are scattered here there over the globe. In Britain, Derbyshire has given a name to the disease from its prevalence there. Other districts are found in Durham, Yorkshire, Stafford, Nottingham, Hampshire, elsewhere. Similar regions are found elsewhere scattered over Europe, as in Savoy, in France; in the Black Forest, Germany, in different regions of the Alps, as in the Valais Switzerland; in northern Italy. The observation of its endemic character naturally led to a search after some special cause, which was no doubt acting in these places.

The first condition which shall be examined is that which puts forward the geological structure of the region as one of the factors in the causation of the disease. Reference is, under this theory, always specially made to the
Magnesian Limestone rock. This formation was no doubt observed to be abundant in some goitrous localities, and by its association led naturally to the theory. On examining, however, the geological structure of the various goitrous districts in England, it is very soon seen that these vary to such an extent, that it is quite evident, that no one special formation can have anything to do with goitre. As far as the presence of lime in many of the strata of these regions is concerned, a similarity may be traced; but the geological characters of the districts certainly vary a good deal. In the first place the Magnesian Limestone formation is entirely absent in many of the goitrous localities in England, so that there can be no special causal relation between this rock and the disease. Thus, in the Northern counties, the Magnesian Limestone reaches its maximum thickness in the east of Durham, and from this passes downwards by Yorkshire and Nottingham, gradually thinning off to the North and West. The composition of the rock, this sometimes having as much as 60% of Carbonate of Magnesia, is very often almost entirely composed of carbonate of lime. (Lyell: Geology—Permian System) In portions of this tract of country, where this rock is found there is endemic goitre, such as in Yorkshire, Nottingham, and Durham. On passing from
from the Magnesian Limestone region of the north towards the Midland and Southern counties, we see that this formation is entirely wanting. In the classical region of Derbyshire, the Carboniferous or Mountain Limestone is found & this belongs to quite a different geological epoch from the former. On passing and further to the south, as in Sussex, where goitre, according to Bristowe, (Textbook of Medicine p.574) is endemic, another different formation is come upon, viz. the chalk. (Lyell’s Geology - Carboniferous & Cretaceous Systems)

In thus observing the absence of any real resemblance in geological formation between the different goitrous localities, details are not gone into, as the evidence is quite sufficient to put aside any special influence of the Magnesian Limestone. In considering the geological structure of a locality in relation to disease, too much stress must not be laid upon it, for its influence does not depend so much on this character, as on the physical condition of the region in relation to the inhabitants. The deeper strata may influence the character of the water supply, from this source it is usually good, being free from contaminations which it might otherwise run the risk of acquiring if from more superficial strata. Experience points to the condition of the layers near the surface & of the surface itself, as being most important in influencing the health of the inhabitants. This may be seen
in the manner in which aquae develops in different
regions—in which not the geology, but the physical
condition of the soil is the prime factor in the case.
I have put prominently forward, in all the regions
I have mentioned above, the presence of carbonate
of lime, in some form or other, the action of which
in relation to the etiology of goitre must must be
examined.

The lime theory, in the same way as the geological
one, took its origin in association. It is not un-
supplemented by apparently good evidence. Thus it is
depicted, that in the Punjab, where 60% of the popu-
lation are afflicted with goitre, 69 grains of lime
have been put in one gallon of water (Quain's History
of Medicine. Art. Limestone). This seems to go in favour of the
limestone theory, since lime to the amount of 10 p.p.m
the gallon is according to Prof. Bancroft "an undes-
irable proportion." In regard to the action of lime in
the drinking water on health, it has been found
impossible to prove by statistics that soft water
is better for health. "It would seem, in fact,
that the question between water hard from calcium
carbonate & soft water is not an important one.
When water is hard from calcium chloride & sulphate,
it seems more injurious to health. (S. A. Parker,
Art. Public Health. Quain's Dictionary.) Lime is of universal occurrence that it would be difficult to find
regions which could supply water without being
irrigated by it to some extent. Practically
all over England, limestone may be found
in its state, & with this general distribution
how is fomite so limited in locality & in many
limestone districts entirely absent? Even in
soutic localities, which are associated with
limestone formations, the disease is not distributed
in proportion to the limestone, in many cases;
but in such a manner that would quite render
the lime theory doubtful. The fact that hard water
containing calcite of lime are found where no fomite
was ever endemic, is admitted by Bristow to be
a serious objection to this theory & he mentions
thatTicknor was induced to supplement the
action of the lime by the presence of a principle
of malarious nature. Others, also, struck with
this insufficiency, were led to look for some
other substance which might be a probable cause
of the disease. This is is supposed to be found
in some impurity of metallic character,
probably some form of iron (Ironie Dick: article.)
These the latest authorities on the subject, point
out "that metalliciferous earth, it may be said,
almost without exception, are to be found in
the neighbourhood of the Magnesian Limestone
districts." It will be observed, that here again
this special formation of rock is brought forward
into prominence, as if it still had an important
association; but, of course, this is not the case.
I have simply quoted this opinion at present &
will refer to it afterwards.
These theories as to the formation of goitre, the simple association of the two conditions - the hard water and the endemic disease, is the strongest argument in their favour. I shall next describe the associations of goitre in Aberdare Valley in respect to their bearing on this point in its etiology.

The long-straggling town of Aberdare, is built upon the banks of the river Dare, which with its tributary, the Eynon, drains the Aberdare Valley, in which upwards downwards from one end to the other, there exist numerous villages, some low down along the bottom, others placed higher along the mountain side, springing up with the development of the coal mines; but the larger proportion of the inhabitants lie along the lower lying parts. The mountains which wall in the valley, rise up rather suddenly, just where Aberdare is situated. They run approximately East & West, separating more widely to the West, & narrowing towards the South East. The prevailing winds are from a South-Westly direction & laden with moisture from the sea, are cooled as they touch these South Wales ranges & render Aberdare a very rainy locality; but not much more as these similar mountainous regions, with the same exposure along our Western shores. The rainfall for the past year was 58.88 inches; & this must be taken as rather below the average, owing to the summer being
a dry one. It is not surprising therefore, that years ago, aqueous engine was very common; but with the development, the soil got drained and primary aqueous has died out completely. The low-lying lands along the river margin are yearly flooded many times, but the water mostly soon runs off again, though here and there, where the soil is not as well drained, where it lies low, stagnant pond, on the summer time, filled with vegetation are met with, but these are small and insignificant and can hardly be regarded as a source of much evil. The sewer of the town is carried down to a large sewage farm about nine miles distant, which also receives the sewage from Merthyr. Cultivation of the soil is not carried on (near to Aberdare) to any great extent, since the development of mining has wholly absorbed not only the attention of the inhabitants, but also a considerable part of the land. This, however, as mentioned before, has ached quite as well as cultivation, as good drainage in giving the soil of any malarious influence.

As regards its geology, Aberdare Valley is situated in the great South Wales Coal field. It has been already shown that it is highly improbable that jute should be associated with any special formation quite. The limestone chaise, which belongs to the carboniferous system, just where Aberdare is situated, placed deeply.
This section is a pretty accurate representation of the upper layers close to Aberdare. The strata are those which form in this neighbourhood the upper parts of the hills, bounded generally, passing over the valley.

Section showing the character of the strata from which the Aberdare water supply is drawn. (From chart of Wayne's Merthyr Chasm Coal Colliery.)
does not come near the surface. It is not reached in mining for coal, and this is important as many of the chaps are sunk high up the mountain. Further to the westward, however, the limestone crops up. The coal measures and the ironstone beds lie above the limestone, and this is more important owing to the water-supply being got by surface drainage from the tops of the mountains on each side of the valley. In examining the strata which show themselves on the mountain tops and close to Aberdare, they are found to be different forms of sandstone, known as the pennant rock, but it is from this that the water supply is got. There is perhaps a little comes all the way from the limestone beneath, but from the fact that the drainage is from the top of the hills, not much will come from that source. This is borne out by the result of the analysis of the water, which shows remarkably little lime. I have sketched out a section of the superficial strata, taken from a chart of one of the collieries, and from it the character of the rocks composing them may be seen. (See opposite.) The water supply, as said before, is obtained by surface drainage from the mountains on each side of the valley, the old supply is got from the south side, being collected in the same way as the Portland supply of Edinburgh. It is filtered before being distributed. The new supply is got from the
north side & is unfiltered. Especially in regard to this northern supply, which comes almost solely from the pennant rock, there is almost a minimum amount of lime salts. Indeed the water from both courses will be seen from the following analysis by Mr. Morgan, County Analyst, Llanercha. to be soft water.

\[ \begin{array}{c|c|c}
 & \text{No. 1} & \text{No. 2} \\
\hline
\text{Compound} & \text{gals. per gill} & \text{gals. per gill} \\
\hline
\text{Total solids in residue left on evaporation} & 2.80 & 4.50 \\
\text{Chlorine} & 0.50 & 0.70 \\
\text{Equivalent to Colloid chloride} & 0.82 & 1.15 \\
\hline
\text{Parts per Million} & & \\
\text{Free Ammonia} & 0.01 & 0.04 \\
\text{Albumenoid Ammonia} & 0.06 & 0.06 \\
\text{Total hardness (Clarke's scale)} & 1^\circ & 3^\circ \\
\end{array} \]

In the present instance, the only constituent of these waters which is of interest, is the calcium carbonate especially in regard to the small amount of it which is present. It will be seen not to be very much in either case. In the old water supply which has been used for a great many years, there are 35° of hardness only. This is just about half as hard as the Edinburgh water supply &
yet goitre is not prevalent in Edinburgh, it is in Aberdare. But not only is there this difference to be noted in these two different places, but there is, along with the soft water, quite an appreciable difference in the amount of goitre in different parts of the valley, which are supplied by this same water. Thus in the Glynyp district there are more goitrous cases than in Gemammon towards the east. This would seem to indicate that the influence which induces bronchocele is not even derived from the water but affects the inhabitants of a region in some other way. In the new water supply, with its very small degree of hardness, there lies no protection against the formation of a goitre. The progress of the tumour goes on uninterrupted by its use. I attended a woman in her confinement, living in a village to which this water is sent, and found her to have a large goitre, which had developed greatly during her pregnancy, even although she was using this very soft water.

In opposition to these facts may be placed the Punjab with its very high percentage of goitrous cases and its very hard water. But this evidence, although the association is striking, may be an association and nothing more, for it cannot be regarded as proof of any direct connection between the two circumstances. As pointed out before, it is a very grave objection to the time
Theory, that in decidedly limestone districts, where the water is really hard, there is no goitre; whilst on the other hand, in a region where the water may be called a soft water, there exist endemic goitre; not only this but that different parts supplied with the same water, show a difference in the amount of goitrous cases; these facts naturally lead us to the conclusion, that in all probability the presence of lime in the drinking water, has no direct causal relation to the presence of this endemic condition at all. It is not denied that in South Wales, there are great formations of Carboniferous Limestone rock; but, as before pointed out, its presence must have a very distinct connection with the inhabitants before it can be assumed to be a cause of their diseases. As regard the inhabitants of Aberdare, it certainly has no very distinct connection; and if its influence is assumed to act in any other way than by solution in the drinking water, this is open not only with equal, but with greater force even, to the arguments used against it in solution. And also, opposed to this is the experience that the physical relations of a soil and country (of course this is influenced to some extent by its geology) and its chemical composition, have the greater influence over the health of the inhabitants.

This result as to the nature of the limestone theory in
This country, is also confirmed by the results of an investigation into the "Climateical Diseases of Northern India" by T. H. Maenamara, in which he supports the malarial origin of the disease. Here is some evidence also, in relation to this theory, to be brought forward in connection with literature, which will be discussed immediately. Mr. Maenamara has compiled a series of tables, giving other possible the relation of the hardness of the water to the prevalence of p邱ie in Bengal. The facts which they bring into notice are very interesting. Thus they show, that in some districts with universally hard waters, p邱ie more or less generally prevails, e.g. Burmah, Sikhoit, thampuram andDarum, whilst on the other side of the Ganges "in the Patna and Shahabad districts, in which p邱ie is not an indigenous disease," the water is equally hard. (Maenamara: Discuss of Northern India p. 16)

It is also shown that soft waters, derived from the ordinary tanks in villages & from rivers, are used by the inhabitants of very p邱ious regions.

Leaving these, the subject of the line theory as untenable, there next remains one to be discussed - the influence of locality, & in doing so, the next most important local influence, which has as yet been brought forward, is malaria. The facts and arguments brought forward by Mr. Maenamara will in the first place be stated.
before describing the relations of the malarial poison to the disease. In his account of the character of fever in India, there is an absence of the precise history of the fever in relation to the malarious condition of the regime & to the individual, which is accounted for by the nature of the mode in which the information was put. Attention is more drawn to the surrounding conditions of the disease than its relations to the patient; so that the whole theory practically rests on the two statements:

1. Some malarious regions are pestilential also, and
2. In many cases, the fever first appears when intermittent fever is most prevalent.

Since the argument that the spleen & thyroid have a similar function is brought prominently forward as supporting his contention, it were well, before proceeding further, that this point be discussed.

That the spleen and thyroid are engaged in the same physiological process has not been proved. Any analogy in function cannot be concluded from any similarity in anatomical structure for the two organs are very different in that respect. In the latest edition of Hater’s Physiology, there is no very definite statement as to the functional relations of the thyroid to the blood. The fact that some blood pigment is found in the vesicles with some broken
down debris is not proof that there, red blood corpuscles are broken down in any systematic manner comparable to what takes place in the spleen. Chemically the extractions of the thyroid resemble those of the thymus; but they are very scanty and both are somewhat similar in this respect to the spleen. (Foster Physiology, p. 485).

The thymus in the adult may be said to have no physiological activity or next to none, its functions being largely developmental; it may be that the thyroid is similarly constituted. A point of resemblance is mentioned by Moritz (Ziemann's Diseases of the Spleen Vol. III) that in disease either spleen or thyroid there is associated a leukocythaemic condition of the blood. In regard to this statement I can only say that after examining the blood in the largest goitres I have seen, there is no excess of leucocytes present or anaemia. Indeed the great majority of bronchocel patients enjoy excellent health, the leucocytosis seeming to have no direct influence in impairing that. If the enlargement of the thyroid must be compared to that of the spleen, it resembles the condition of that organ more in lymphadenoma than in any other condition. In both cases there is no excess of leucocytes in the blood and in both from long-continued congestion, a fibrous change takes place. Beyond this similarity, which is no doubt superficial, there is no real resemblance between
the less diseases. It has been shown that the
spleen can be excised without any evil effects on
the economy, and reasoning from analogy, excision
of the thyroid (supposing it had the same function)
ought to lead to still less risk, after the imme-
diate danger from the operation was over. This
however leads us on to a very interesting phase
in the history of the thyroid, owing to the
peculiar train of symptoms which are said to
result from its entire excision—symptoms which
resemble to some extent the features of cretinism
and of myxedema. The evidence in regard to
this is conflicting, & it may be, that in the
first apparent light which was thrown on this
dark corner of physiology, conclusions were
jumped at too rapidly.
After the operation of extirpation of the thyroid in
its entirety, there follows in some cases a series of
symptoms, to which Kocher, who was the first to
particularly call attention to this subject, applied
the term, cachexia strumipriva. These symptoms
consisted in pallor, feebleness, anemia, swelling of
the face & hands, but without albuminuria, with
loss of sensation &c. This corresponds to the symptoms
observed in Myxedema, and were described with-
out a knowledge of that disease as known in
Britain. The most marked appearance of this condition
was seen in children and young growing persons,
who soon showed signs of mental impairment
with dullness of thought & speech. The development
of their bodies was also affected and some of these cases a true cretinoid conformation has been observed. Parenthetically, I may say, that though enlargement of the thyroid is very common here, I have never observed symptoms which could justify its excision in them, and even in adults urgent symptoms are not frequently seen comparatively speaking. Especially in children also, before the tumour has had time to become hard epibros, it most usually yields to simple treatment.

From these observations the thyroid gland was supposed to have some peculiar influence on the nutrition and development of the body. By Schiff it was considered that the thyroid regulated the blood supply to the brain; and that it also acted as a regulator of the constitution of the blood. Since in Myxodema there is an excess of mucin, with other changes in the connective tissue, and owing to the resemblance between this disease & cachexia simipriva, the function of the thyroid was supposed to be related in some way to nutrition—its destruction resulting in the nutritive changes to be observed in the former disease. The symptoms after excision, however, may also be regarded as the normal evolution of a disease—changes which would have taken place whether the thyroid had been excised or not. In opposition to the testimony of Kocher, Prof. Billroth of Vienna, though he has excised the gland many times he has not met with a single case of this cachexia
May this be the result of the difference in source of the cases? Be the locality from which they came? Budeleben, (Sir W. MacBorne, Address in Surgery, 1885) who opposed the idea that the cachexia was due to the excision of the gland, supported this by the results of experiments on animals. In these, although the spleen & thyroid were removed separately or together, no impairment of health followed if the animal recovered from the immediate effects of the operation. In opposition to this statement may be mentioned the experiments of Barley (British Medical Journal, Jan. 27th & 31st 1885) in which he describes the effect of excision on Montseep. In these, even so soon as five days, on an average, after complete hypopitotomy, symptoms began to appear. These were of the nature of tremors or fibrillations of the muscles of the hands, feet and jaws. These increased till they became paroxysmal in character, being described as a "dental paroxysm." These motor disturbances are central in origin; but are probably not due to an affection of the centres cerebri, but to lower motor centres. With this condition there is also a depression of the entire mental faculties, with some anaemia. There was also said to be a slight increase in mucin in the connective tissue generally. But this is only one side to the question, for the thyroid may be excised without any of these untoward consequences. Bellrath's testimony has been before mentioned, and in MacBorne's case there was not the slightest trace of myxoedema.
4 months after the complete extirpation of the gland, after which time if its functions were so important, there ought to have been observed some effect. The tendency of these observations on thyroidectomy is of course to refer myxœdemata to the loss of function of the thyroid gland. But again, it seems strange that the excision of an organ like the thyroid should have such a profound influence on the nervous system. It might be said that the cachexia which resulted was from a form of blood poisoning—that some product hitherto modified by the gland was let loose on the economy. All our ideas ofrophic function have been centred in the nervous system, and with very good reason; so that it is very natural that these changes should also be referred to a nervous lesion. In a case observed by Harley for nearly seven years (Lancet, April 19th, p. 706), on post-mortem examination, the excreta of mucin were only about double the normal amount, and in the face of the great increase of the fibrinous tissues, he does not think the mucin of importance. He refers the pathology to the degenerative ganglione, which in this case were involved in adherent and degenerated pleura from old inflammation. Another case shows the complication of myædema with intensity also pointing to the central nervous system. (Lancet, May 31st, p. 975)

This question, however, is still sub judice, and its connection with goitre lies in the assertion of some
that cretinism (which is classed with myxedema and cachexia strumipriva) is due to the same cause as goitre.

In sporadic cretinism the thyroid in many cases is said to be atrophied; but that this is not the cause of the condition may be seen in cases where the thyroid is not much altered. Not only may it not be absent; but in some cases of sporadic cretinism, it is found enlarged (Stedman, Dec. 15th/83, p. 1064). I do not think that endemic cretinism exists under the same aetiological conditions as endemic goitre, believing them to be perfectly distinct diseases, with different exciting causes. The association of them in one locality is probably an accident, for numerous very goitrous localities in India show a complete want of cretins. That seems to me to be the most acceptable explanation of the presence of endemic cretinism, is that which attributes the condition to a degeneration of a people, from debilitating surroundings and too close interbreeding. If the two diseases had a common cause, both would always be associated. In Alordare, with a population of 38,000, I have not yet met with a true cretin. There is one case of a lad with a cretinoid conformation of body with some mental deficiency. This condition is attributed to a paroxysm received when about 6 years of age. He has no goitre & his brothers & sisters are healthy.
In Berkshire, in the Parish of Flools, when I happened to be there in 1882, there was considerable anxiety in the Parochial Board in regard to the maintenance of the ever-increasing number of pauper lunatics. The reason of this state of matters in so small a community was discussed in order that if possible some remedy might be suggested. One member I believe expressed his idea of a remedy in very straightforward language. It was nothing less than a condemnation of too close interbreeding. Fresh blood was agreed to be the remedy, and the want of it the cause of the idiocy prevalent in this little mountain village. And this is easy to understand, owing to all the best and most active spirits in the place leaving to seek their fortunes elsewhere. Breeds are not developed in one generation. We can see the steps of degradation side by side—the mere vegetable existence of the worst with the various degrees of improvement up to the comparatively rational specimen. "Is not privation the effect of privation of light? Do we not see it endemic in those very localities, which by their situation are shut out from the full light of the day, as Solinelli remarks, "the shady sides of the valleys;" where, if the sun visit the unfortunate villagers, it is only to give them a sip of its streams of light which is insufficient to counteract the baleful effects of its absence during the
remainder of the day." (Climate, Weather and Disease by A. Haviland 1882: p. 91)

There being no pure cretins in Aberdare that I have seen, and since the largest goitres which have come under my observation, are not in any way detrimental to the mental or physical development of the patient, even though they began to grow in childhood, I am convinced in my own mind that cretinism & goitre are unconnected in etiology; but nevertheless there is a relation between abnormal states of the central nervous system and the existence of a goitre. Thus in two patients who are slightly deficient in intelligence, and who have such a goitre, it is comparatively large in them, when compared with individuals in the same circumstances of life. Thus, I think that if there is an abnormal central nervous system such as occurs in idiocy, there is a tendency to the greater development of the humour. This explains why cretins are more liable to goitre, when in a goitrous locality, in proportion to their numbers, than the ordinary population. This does not, I think, point to any etiological relation between cretinism & goitre; but it simply partakes of the same character that pregnancy bears to goitre—a condition which aggravates its presence; so that it might be said (from this relation) that pregnancy & goitre had the same etiology,
as that cretinism and goitre arise under similar conditions.

Cretinism, from what I can judge, really commences in the development of the child. It is an inherited disease. Bronchocele, on the other hand, does not have any relation to the state of development. It is not a symptom of regression, but an accidental condition arising in a healthy organism.

The function of the thyroid, though still undecided, lends itself to be placed apart from that of the spleen.

The Malarial Theory of Goitre

The theory of a malarial origin of goitre is not a new one, and many facts have been brought forward in support of this view. There is no doubt that goitre is associated frequently in a very marked manner with a malarious condition of the soil, although this is not invariable. In Bengal, according to Macnamara, the disease begins to be prevalent north of the river Ganges, being almost unknown to the west and south of that river. The extent of country, however, which is included in the Himalayan and Sutlej Himalayan regions, renders it necessary to take up the smaller districts into which it is subdivided and study the associations of the disease there, since in this way the special characteristics of locality can be com-
pared in a more definite manner than by consid-
ering the region as a whole. I shall therefore
give a short description of the facts which
are brought forward in Mr. Macnayara's vol-
ume, taking the best of those which seem to sup-
port the theory, and the best of those which
seem to go against it.
The first district which I shall describe is
that of Nymensingh. It is situated with the
river Jamoune at its western boundary, separat-
ing it from Cutna, Bogra and Rangpore. To the
north lie the Garow hills, to the south lies the
Bosee district, whilst on the east it is bordered
by the district of Sylhet. The country whose
boundaries have been thus defined presents
characters which are very common in Bengal.
The Brahampoona, now an insignificant
stream runs diagonally across it from N.W. S.E.
Joining this at the south east angle, is the river
Burma, which bearing down an immense vol-
ume of water is the principle cause of the great
overflso in Eastern Bengal. The south east
portion of Nymensingh is affected by it. the
country being low lying & marshy, in summer
covered with the ruins of water with large
bogged masses of vegetation floating gently
seawards; in winter thick with stagnant pools
and grassy marshes. The North west portion is
cut up by many connecting branches between
the rivers Jamoune & Brahampoona, and this
in the winter leads to the presence of many "churos" the Madhopore jungle stretches up from the south, leaving the Dacca district, and the neighbourhood of it is very unhealthy. The whole district of Mymensingh is very malarious, but the worst portions are (a) the tract along the base of the Gharow hills, (b) the eastern and south eastern portion and (c) the neighbourhood of the Madhopore jungle. Goitre is more or less prevalent over the entire region, but is especially prevalent in the district of Altia, between the Madhopore jungle and the Samoona, along the base of the Gharows and among the churos of the Brahmaputra. The goitrous regions thus do not correspond to the most malarious entirely, for one that stretches along the banks of the Samoona is comparatively healthier than the less goitrous, but more malarious south eastern portions. This goitrous tract along the left bank of the Samoona corresponds with similar goitrous regions on the right bank and the adjacent country in the district of Pabna, and this again is prolonged into the more northern Bogra district, still however keeping to the region of the river. More remarkable than this is the distribution of goitre in the district of Maldah, situated on the north bank of the Ganges. It is divided into two portions, east and west, by a tributary of the Ganges, the Mahanadi, which runs approximately north south. The climatic characters of the two portions are very different. The soil
of the eastern portion consists of underlying clay. The country lies comparatively high and is not liable to inundation, and is covered, where not cultivated with scrubby jungle. It is inhabited by the Poles, a semi-aboriginal people, who are very healthy and robust. They are good cultivators of the soil, are well off, and live better than either the Hindus or Musslems. They build and inhabit separate hamlets which are cultivated up to the doors, a practice which ensures cleanliness among the houses and prevents them from being crowded together. The country to the west of the river is lowlying and subject to floods in the north by the Mahananddee itself, and in the south by the Ganges, which as they retire leave the sandy soil covered with a deposit of mud. (Menamara. Colnett's York Northern India, p. 157)

The western portion is very marshy, whilst the eastern is not as might be expected; yet the distribution of pothe in the region is quite the opposite way. In the district of Mymensingh the people are mostly of the puny and degenerate type as frequently seen in Bengal. In the district of Nadia, pothe prevails amongst the strong and healthy Poles east of the river Mahananddee whilst to the west of the river in the marshy region pothe is not found. One would naturally have expected the opposite of this, but it is not an exception in relation to malaria and pothe. Thus, in the district of Gosalpara, in Assam,
which is very malarious and unhealthy, goitre is not common, and, when present, is apparently limited in locality, (Macmillan p.171) and in the district of Kacurpoop, which includes ground to the north east of the Brahmaputra, goitre is found north of the river only, and not in the southern portion, and both parts are malarious. (Macmillan p.173). When a region is both poisonous and malarious, there is no apparent substitution of the one disease for the other, because intermittent and remittent fevers are equally common in the poisonous and non-poisonous portions, other things being equal. This localization of goitre is often very marked. In the region of Sub-saugar it is localized in spots which do not seem to differ from other localities along the same river. In a special report by Dr. Hughes, of the Howzong district, met the Klimarians, though attending an enormous cage often, are "by no means associated with the signs of malarious cachexia, that is, that many of the patients appear to be in good health." Aberdare Valley, like many other regions in Great Britain, was formerly the habitat of intermittent fevers, which happily have been rooted out. Yet, of course existed hot at that time, and it will be interesting in connection with the malarious theory is note the relations of the disease in Aberdare.

Some of the facts brought forward from India
are very striking. Thus, at an outpost for depo on at Boota Mookh, 3 months residence there is sufficient to cause a development of Pneumocoele (Maeawara p. 149) and in the same region, if a regiment marches along the banks of the river Betsang, every man in it is said rapidly to develop a goutiness of the hip joint (ibid. p. 181).

In the district of Bacter, Eastern Bengal, jaipre is very much localized, occurring along the banks of the river Sonai principally. The people, who are said to be affected, are "well to do, well clothed, living in good houses, situated in pleasant villages." They drink the same water, which is used by thousands of others who are never affected and the civil surgeon of the district is at a loss to understand why "this disease should be thus prevalent among the people of this particular locality." (Maeawara p. 243) This relationship to the water-supply is another instance, where the distribution of the disease & the water does not correspond. This presupposes that the habits of the people are the same in this respect. In Chetla Valley, this is to be observed to some extent, though in not quite so definite a manner, for with the same watersupply, the distribution of jaipre shows variations which are without relation to the water drunk. It is more prevalent in some parts of the valley than in others. In those the same water is drunk, the same sort of people live in the same way, there is no apparent differ
one of any climatic feud, which can be fixed upon as the cause of this. It was before mentioned that goitre was prevalent along the southern base of the Garrows hills; but in the district of Shillong, amongst these hills, there is no goitre though the region is malarious. (Maunmare p.194) The same condition is found in Sylhet (p.198). Dr. Ritchey, sanitary commissioner for Bengal, in speaking of goitre considers that, "The disease prevails under such opposite conditions that it is not possible to discover which are those which favour its development" (Maunmare p.223) on the other hand goitre occurs in positions which are considered very healthy and trapply, compared with the hot plains of Bengal, as in Raneehat (p.329).

The evidence which is brought forward from the Poubha Mortk station and from the Dikrong field force as to the development of the goitrous humour amongst the soldiers is very striking. It was, indeed, believed that the epidemic of goitre, as it might be called, replaced the fever which they might otherwise have had. In the goitrous districts though the goitres are said for the most part to commence when the malarious season is at its height—that is during immediately after the period of the rains— it is not recorded that enlargement of the thyroid will take place instead of the spleen. Indeed from the description of the two diseases one is led to
believe that enlargement of both organs may go on independently. That this is due to the same disease is not likely as a general rule, although it is not improbable, that occasionally an enlargement of a vascular organ as the Hypoide might take place in the course of an intermittent fever, just as it is found enlarged sometimes in the course of other general diseases, such as leucocytæmia. That this, however, is not the cause of the formation of bronchocèle in malarious districts, is perfectly evident from the fact of large tracts of country, which are distinctly, often very, malarious not having goitre as an endemic disease. Influenced by the presence of malaria, goitre may lie and no doubt is; but even the facts already mentioned would lead one to suspect that the disease which gives origin to goitre, shows considerable differences from the producing cause of goître wherever that may lie. In this country where there are no such periodic rains as the origin of goître seems to be affected not so much by the outward condition or surroundings of a patient as by what may be termed an accidental exciting cause being present such as pregnancy &c. The tendency to goître being present, the onset of the fever season may only be an exciting cause, and not a producing one.

It will be as well to give here in a few words the conclusions which Macnamara arrived at after putting all the evidence together. It will be found
that northern India is generally malarious, that
fevers of intermittent and remittent kinds are found
throughout the whole country; that goitre has a less
extensive distribution and seems more localized;
that the presence of goitre is sometimes associated
with a very malarious condition of soil; but that
also in contiguous districts equally malarious,
goitre may be present in the one and not in the
other, and even in comparatively healthy districts
goitre may be endemic. From all these facts
Mr. Macnamara supports the malarious origin
of the disease, his results being summed up in
several concise statements. He regards the
physical conditions of the soil as fostering a
malarious mode, of which however there are
various species, one of which may exist to the
exclusion of all others. The diseases which
these give rise to are—dysentery, cholera, goitre
and elephantiasis, and he is of opinion that
these would probably prove amenable to
the same sanitary & preventive measures
should these be carried out. It would be
out of place and apart from my present
purpose to enter into any discussion in regard
to the specific identity of these diseases men-
tioned. The point to be discussed is, that,
in the development of endemic goitre in relation
to the effects of local climate, "the conditions of
soil, water, air, and climate must be such as
generate malarious disease."
If true, it can be shown that a malarious condition of soil is not necessary for the production of goitre, it will be evident that malaria itself is not the direct cause of goitre. Putting aside the endemic form, the sporadic cases of Bionchochlle (and these are not uncommon) present at once a difficulty in the light of this theory. Taking the endemic form of the disease, which is seen in Aberdare Valley, the relations of malaria are interesting and instructive—relations which point to the conclusion that here at least there is a specificity more than a specific difference between the two. As mentioned before, Aberdare valley was formerly malarious, and then as now goitre was common. While this was the case the circumstance would be explained by stating that the climatic conditions of the locality were favourable for both, because both required the same physical conditions for their development. The valley, then, with increased mining because better drained, cultivation, though not very great, is extended as far as practicable. The inhabitants got a constant and good supply of water, and with this increase of hygiene, goitre died out. If the malarious theory were true, pari passu with the disappearance of goitre, goitre might also be have disappeared as an endemic disease. This is not so. Goitre is still prevalent...
Such cases can be seen every day in children, young girls, and young married women, who have never had ague or shown any symptoms of malarious influence. Primary ague is now rare or extremely rare, seen here. I have never met with a case. We must therefore conclude that goitre in this country at least, is not amenable to the same curative precautions which have extinguished ague.

Sir T. MacCormac, in his address at Belfast (1881), before the Surgical Section of the British Medical Association, described a case of goitre in a young girl which he was inclined to consider "pointed to a possible malarial origin of some forms of acute enlargement of the thyroid." The patient, who was 18 years old, four months before coming under observation, felt her neck begin to swell. She also complained of headache, flushing in the face, throbbing of the temples, coming on at the same time every day. These symptoms suggested treatment by quinine, and by giving this in large doses, the symptom gradually disappeared. The periodic character of the symptoms from which the patient suffered does not however always indicate a malarial influence; for I have observed very similar symptoms recur from cataract of the stomach, and quite as periodic. The more work recent, also, its treatment with quinine, is not complete proof of its malarial origin; for in the treatment of exophthalmic goitre, good results...
are also obtained by administering large doses of quinine. Friedreich obtained through in serious cases by the continuous administration of large doses of this drug—12-15 grm. in the 24 hrs. Demir, Demarquie and others confirm this and consider the drug to act directly on the sympathetic.

(Regnier’s System of Medicine, Vol. 5, Art. Ophthalmia
p. 376)

That the malarious poison exerts an influence over the development of a portie, is no doubt probable; and the explanation seems to be the marked action of malaria on the nervous system. The localized neuralgias, which occur, in one who has long ago been exposed to the action of the fever, show how lasting this effect is, and it is possible that this action, acting on a person already subjected to the influence of a goitrous locality, may precipitate or increase the formation of a goitrous humour.

One very cases, that of a man, showed a history of gout, which was acquired over 20 years ago in the Alberose Valley. In his case there is very great enlargement of the left lobe of the thyroid, in nature fibro-cystic. The rest of the gland is normal. He states that during the time that the paroxysms of the fever lasted, these occurring every other day, there was no appearance of any humour in the neck.

An enlargement was first noticed some four
5r five months after his recovery. After this its growth was steady, although for some years it had ceased to increase much in size. He is now 63 years of age. Occasionally he is subject to what seems to be very slight attacks ofague, as slight however that were it not for his history, they would probably be overlooked. I saw him in one of these. The least step is of more than a feeling of chilliness then he feels warm towards evening of the same day seems a little. I saw him in the surgery about 11 a.m. when he felt chilly. On going to see him in the evening I found him sweating slightly all over. He then informed me that he had an attack of the sort once or twice every year, and that it always began at the same time and lasted usually one day. His temperature was normal in the evening. This, I expect, may be put more as material from his previous history. These slight attacks have no influence over the enlarged thyroid, the growth of which was always steady and uninterrupted. I may add that there is no enlargement of the spleen. The patient was slightly anemic but there was no increase in the white blood corpuscles of the blood. The gradual and progressive enlargement of the one lobe of the gland does not correspond to what takes place in the spleen in a malarial history, but an important statement has been made, in relation to the gradual
enlargement of the spleen under the influence of malaria. Dr. Crombie (quoted by Macnemara p. 116) says, "usually it (enlargement of the spleen) is preceded by intermittent fever, but in many cases the fever is slight, and in others the disease arises in a slow vicisous manner without attracting the attention of the patient, or being attended with any constitutional disturbance." This fact, while admitted to occur, is regarded as rare by others; but at any rate it raises the question whether the enlargement of the thyroid may not be due to the same slow and vicisous action. In India most fevers are said to begin during the fever season - during or immediately after the rains, and some believe that the thyroid may replace the spleen as some event in the pathological history of intermittent fever. This idea, however, has not much support, since it would be difficult to see why in many localized regions there would be this peculiarity of action in this respect of the malarial poison and not in others. The relations of the enlarged gland in the case I have just mentioned do not seem to harmonize with this view, one would have expected, looking to the general effect of malaria on the system, that the whole gland would have been enlarged. But such was not the case, even though the thyroid is rich in anastomosing vessels.
If this enlargement of the left lobe is an effect of miasma, it reminds one of the after effects of it in producing localized affections of the nervous system. In this sense thehumour may be explained—that the malarial which can cause long continued attacks of neuralgia, acting in the same way on the thyroid by influencing the neuro-motor or trophic fibres passing to the left lobe. This like a local neuralgia would also account for its local action on part only of the gland. But even if this explanation were satisfactory, the position of miasma as a cause cannot be considered to be of more than secondary importance.

A second case of goitre in a man has come under my notice; but the interest here is not so much in the malarial history as in the complication of the case by the presence of epilepsy. In his case the appearance of the goitre bore no relation to the attack of intermittent fever. His spleen is not enlarged; but he suffers much from headache and dyspepsia, and is somewhat anaemic. With these exceptions, however, his systems are normal, except for the presence of a small enlargement of the isthmus of the thyroid gland. The relations of the goitre to the epileptic attacks will be referred to later when discussing the nervous relations of Bronchocele. That goitre, however, is associated with any
malarial history here is not to be found. The two cases which I have mentioned are the only ones which I have met with and I do not think that there is much of importance to be deduced from them, when compared with the great number of cases which have certainly no malarious history at all. I have seen one case of a native of Aberdare, a woman, who, having resided for some time in N. Carolina, U.S., there suffered from intermittent fever. She has been living for some years again in Aberdare but there is no sign of any enlargement of the thyroid.

From a consideration of all these facts, I have been led to the conclusion that, a malarious condition yeoil is not necessary for the production of goitre, there being no necessary relation between the two. Intermittent fever has for a long time been relied in Aberdare, yet goitre still prevails. In the absence of all well recognised signs of the presence of malaria, it is impossible to refer the presence of goitre to that cause.*

Reverting this result in view there still remains to be considered, 'What is the influence of locality which can predispose to this condition?'

Before entering into this, it will be necessary to study the relation of bronchocele to conditions in the subject, as this method leads better to the conclusions which I have drawn.

*Note. I am led to believe that goitre exists in the Galloway district. This is gathered from the little I have read by M.R. B. Jeffrey M.D. (Edin. 1874). I have however been unable to get any more information, and consequently cannot say whether it would add to the evidence against malaria.
The Relations of Goitre to the Individual

In the preceding pages the external associations which have been observed in relation to goitre have been discussed. From that point of view no doubt much may be learned; but to obtain a better understanding in regard to its etiology, it must be studied in relation to the individual, to the special circumstances under which the humour arises, and to the influences which seem to modify, and sometimes even control, its development, and this too, even in the presence of its endemic character. Not only may some insight be got in this way by shedding its relations to the individual physiological processes of health, but even more may be learned from the observation of associated pathological conditions. In giving a description of the cases which have come under my observation here, I have taken the first hundred which presented themselves, and divided them into classes according to the circumstances of their origin and progress, considering that this will give a very fair idea of the character of the disease.

In noticing the history of these individual cases, it is remarkable how closely related, in a great many instances, are the growth and origin of the tumour to conditions in the actual organs of the female. It is well
known, how very much more frequent the disease is amongst women compared to men. But of my hundred cases, four only were males. In some women, the general effect of pregnancy on the heart and blood vessels, shows itself in a little fulness of the thyroid. In the presence of endemic goitre this condition in the female in relation to the lesion presents almost a pure example of cause and effect in many cases. The enlargement of the gland being due in the first instance to a disturbance in the blood supply from engorgement and dilatation of the vessels, it is natural to conclude that the nervous mechanism regulating this has undergone some change, induced by the action of the female pelvic organs on a nervous system rendered more sensitive to any such disturbance by the influence of locality. Indeed, abnormal conditions of the vascular mechanism, as close is their connection, cannot be separated from corresponding abnormalities in the nervous mechanism.

The occurrence of apocrine goitre (and this does not include the various tumours or cysts which are sometimes found in connection with the thyroid) cannot be explained by supposing any external influence to be at work, similar to what is found in endemic goitre. The idea that the person affected with apocrine goitre had by chance
been exposed to the influences which produce it in its endemic form, is not one which can readily be accepted, because the effect of a gipsy locality–always constant, may be thrown off or the growth check'd on removal from it at an early stage. Thus the same influence acts in a sporadic case, which may have a history of many years, it means that it has acted on this case alone for a very long time without affecting any one else of those exposed apparently to the same condition. It cannot be held that, given the first impression of the disease, it will go on by itself developing its usual course without further exposure to the cause of it, for this is opposed to the known action of gipsy localities. It is, indeed, highly probable that the exciting cause of sporadic goitre is not dependent on any particular internal influence primarily, but that it depends entirely for its origin on causes acting within the body. The course of action in many cases is no doubt reflex. I shall attempt to show that especially in the case of epidemic goitre, the disease is the result of a neurosis, comparable to what occurs in chorea or chronic rheumatic arthritis. It is a dysphory, the peculiar effect which depends on the anatomical character of the organ by which it shows itself. By linking chorea and chronic
rheumatic arthritis. I only desire to give an idea of the pathological position in which I place goitre. I refer to chance, of course, when of rheumatic origin; but the further consideration of this theory had better be deferred till later.

by operative cases which I have seen the following is an example:-

Mrs Lambourne, age 43, residing in the village of Horton, Bucks. In personal appearance the patient is of a hallowed complexion. Her eyes are bright and glittering and slightly prominent, but they are not like the condition seen in exophthalmic goitre. The lids and eyeballs move synchronously. All her systems are perfectly normal except the alimentary and the pelvic generative organs. As regards the latter the irregularities which which issue in the stomat泌 are present. So this disturbance may in part be referred to the disturbance of the stomach. She suffers much from pain in the left side. This dyspeptic condition has been present in more or less degree during her whole life. There is an enlargement of the right lobe of the thyroid, which appears as a rounded swelling about the size of an orange. The date of its origin cannot with certainty be ascertained; but she first noticed it when she was a young girl. It grew slowly for many years, and she did not know that at any special times its rate of growth was modified, not paying much attention to it at all. For the last few years it has remained stationary.
In this case the enlarged lobe has undergone a fibrous change, it being much harder than normal. The heart is perfectly normal. The country round about is flat, the water is obtained by pumps from a rich loam and clayey soil. Neither in this village nor in several round about have I seen a similar case. The patient though a married woman has never had any children. Here no endemic influence can be said to have caused the tumour. Its appearance and history are identical with the endemic form in many cases, and, apart from any local influence the disease must be considered identical.

I shall next describe the disease as seen in its endemic form in Aberdare Valley, and first I shall notice those cases which show a marked relation to pregnancy. The following history may be taken as a good example of this class:

Mrs. II. Llanthonyy. This is a female pauper patient; age 61 yrs., married. She has never had acqu and has all her life been healthy and strong. She came to Aberdare when she was quite a child and has lived here ever since. She is not aware that any of her friends ever had goitre. She has two daughters. One of whom is now in America, the other lives in the neighbouring valley of Pendale, and has a goitre which is beginning to show the same history as her mother's.

Apart from the tumour in the neck the woman is perfectly well. The heart is normal, and the eyes are not prominent. In appearance, the enlargement of the thyroid is considerable; but this
is exaggerated somewhat by the presence of a considerable amount of subcutaneous fat. The right lobe is larger than the left, being about half as large again. The isthmus is not enlarged. The feeling of the mass is of an elastic character and the enlargement is uniform without any secondary tubulation being apparent. The tumour first appeared when she was pregnant with her first child. At this time she was 19 years of age. After being delivered the tumour almost entirely disappeared, but on conception taking place a second time, it grew again, and this time larger than before, diminishing again on delivery, but leaving present a distinct tumour. This was the history with each child that she had, a progressive increase in the size of the tumour occurring, and on reaching the menopause she was left with a tumour somewhat larger than it is at present. She never suffered any inconvenience from its presence. In regard to her daughters, the one who is in America showed signs of a "swell," as the condition is here called, just when menstruation began. It had a short history lasting for a few years only, and was cured by some supposed charm. Of course its resolution was simply an example of a goitre with a short history and a spontaneous disappearance, as is sometimes seen.

In a second case the history is a little more complete as regards the disappearance of the tumour.
A woman came to the surgery on account of dyspeptic symptoms. Beyond this she presented nothing abnormal, except a distinct, though slight enlargement of the isthmus of the thyroid. This was visible to the eye as a bulging forward in that region of the neck, and on laying hold of it, it moved with the trachea in digitation, was rounded, oblong transversely and elastic, though somewhat hard. The lateral lobes were not enlarged. The patient was married, age 50. Beyond the diseases of childhood there was nothing to remark in her history. Born in the vale ofearth she came to Abinda Valley when 17 years of age. She married when 22, and when pregnant with her first child she noticed that there occurred dews swellings at the root of her neck, one on each side of the trachea, and a smaller one right in the middle line. These tumours were always more markedly developed when she was bearing her children, and, indeed, presented the same history as in the preceding case. After the climacteric was passed at the age of 50, the tumours gradually disappeared. The small enlargement of the isthmus which remains, gives rise to no symptoms, except when she catches cold, and then she usually requires a little difficulty in respiration with some pain.

This distinct relation to pregnancy is very marked in this locality. Out of the 100 cases, 35 had this history. In the majority of these, no tumour was noticed at all until pregnancy occurred.
whilst in others, a slight enlargement, usually just sufficient to give a full neck, was noticed at an early period, which could never be stated definitely, but was always before 12 years of age. This, however, with the stimulus of pregnancy soon developed into a very pronounced goitre. Out of the 38 cases 8 first showed signs of a swelling in the neck when quite young girls, and the remaining 30 had the first appearance of goitre during pregnancy. There is no doubt, however, that some of these, from deficient observation, failed to notice that they had a slightly too full neck when young; but in the majority there is every reason to believe that pregnancy was the exciting cause. As regards the part of the gland which was affected, in 6 of these cases the isthmus was alone enlarged. Textbooks usually state that enlargement of the isthmus alone is rare; but I do not find it so, for it is quite as common to find it alone, as to find the right lobe enlarged alone. The following are the numbers arranged according to the part affected:

<table>
<thead>
<tr>
<th>Part of Gland</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Gland (including isthmus)</td>
<td>14</td>
</tr>
<tr>
<td>Two Lateral Lobes</td>
<td>12</td>
</tr>
<tr>
<td>Right Lobe alone</td>
<td>6</td>
</tr>
<tr>
<td>Isthmus alone</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
</tr>
</tbody>
</table>

It is thus seen that a large proportion of the
Cases bear a close relation to pregnancy in reference to the development of the tumour; but this is not the only condition of the female sexual organs which is so related. There are cases which occur in connection with the advent of menstruation. These however do not seem to be of very common occurrence, because in the majority of young girls the disease either appears before menstruation, or come time after that has developed. Out of the 100 cases 10 belong to this category division; but one or two even of these is doubtful. In one patient the goitre disappeared after having lasted for a few years, while she was still living in the valley. This was the daughter of the first patient described. She is now in America and is married, but her mother has no idea whether or not the goitre has returned. In one of the cases the goitre still increases markedly at each menstrual period, but not on the whole increasing much permanently, whilst in another the humour has as increased, that with each menstrual period there comes a period when she is almost asphyxiated from the engorgement of the gland at that time. This is, thus, an exaggeration of what has been frequently observed as an accompaniment of pregnancy and menstruation in many women viz. a slight enlargement of the thyroid.

It is natural to expect that pathological conditions of the pelvic organs of the female, would also act as an exciting cause of
goitre, and such is found to be the case. I have had two cases of young girls, where menstruation had been established for a few years, and on the occurrence of amenorrhea, a goitre began to develop where before there was not the slightest enlargement of the thyroid. One of these was in a very strong girl, who was very big for her years and had grown very fast. The menstrual function first began at the age of 11 and had gone on regularly till she was 15. There was no anaemia present when I saw her and at that time she had had amenorrhea for 4 months, and a goitre was beginning to develop. There was of course no reason to suspect pregnancy. The other patient was slightly anaemic, the other condition being the same. It is not very common to meet with a case which shows any relation to the disturbances of the system at the climacteric; but in one case there was apparently some connection. The patient is a woman, age 43, who all her life had a full neck; but no decided goitre. She, though a native of Aberclay, has spent most of her life in England, about the region of Liverpool. For the last two years, she has noticed at each menstrual period that there is a great enlargement of the two lobes of the thyroid. This commences a day or two before the flow begins, and after this has passed away, it again decreases.
She believes herself that this is connected with the change of life, especially as late in her term worse, but if this is so, there are no other very decided symptoms that such is the case.

Here is, however, another very important class of cases to be considered. This is the class in which the growth has shown itself in young girls before the period of menstruation. In frequency it ranks next to the class connected with pregnancy since no fewer than 22% of the cases belong to it. Many of these, of course, on growing up and getting married would no doubt fall into the class which showed a relation to pregnancy. The degree of enlargement in these cases is not usually very great, but sometimes the gland is pretty prominent in the young girl. The age at which the tumour begins to grow is not always easy to make out; one of the youngest cases which I have seen here was that of a little girl, 9 years of age, who had a rounded enlargement of the isthmus, about the size of a marble, and of about 4 months' duration. The lateral lobes were not affected. The average age of the whole number was a little over 8 years (that is, age of origin of the tumour) and probably this ought to be somewhat less. The majority of cases in this class were still young girls, but a few of them were much older having remained unmarried. The only one of these whom it is necessary to mention in particular, is an unmarried female, age 37, in whom
there is great enlargement of the right lobe of the gland, the other parts being normal. The tumour is hard and lobulated, and has been present since the age of 4 years. The woman is considerably below the average of intelligence; but there is no eutrophic constitution of body. The point to be noticed in this case, is the much greater size of the tumour compared with what is usually seen in unmarried females, in whom it does not develop, as far as I have seen, with the same rapidity or to the same degree as in married women. This case is an example of the influence of a degenerate nervous system (euthyroid) in favouring the development of a goitre. This has been observed before in regions which are at the same time goitrous and more eutrophic, in which it is recorded that the eutrophics are in large proportion goitrous.

In unmarried females goitres also frequently show themselves some years after menstruation has set in. The majority of these cases are got in comparatively young women, up to 25 even 30 years of age, although some occur later. The ages at which the tumour shows itself, thus, correspond pretty closely with the most frequent age at which chorea occurs in young girls or young women.

In two cases which I have seen there was associated with the thyroid tumour disease of the pelvic viscera. One of these, the patient of another
medical man, had an intra-uterine fibroid, while the
whole thyroid was considerably enlarged. The second
case was that of a woman, age 47, in whom there
was a large tumour of the right ovary. As far as
she knows it has been causing symptoms for the
past two years. On examining her neck I found an
enlarged isthmus. She stated that she was not
aware of ever having a ‘swell’ in her neck; but the
size of it is such that it would not attract much
attention, if any, so that it is impossible to say
whether it is recent or not.

Along with these cases I must mention those of mar-
ried women, who, suddenly ceasing to bear children
while they are still within the childbearing period,
present cases of goitre, which under these circum-
stances develop rapidly and steadily—that is com-
paratively rapidly. Coincidently with this there are
disturbances, usually hormonal, which prevent
conception. I cannot help comparing this
state of matters to what is found in very many
cases of chronic rheumatic arthritis. This point
will receive more attention later on.

In considering the mode of action which in these cases
results in the formation of bronchocle, it will be
as well to consider the relations of this disease to
enaphthalmic goitre, to see if the one may throw
any light on the other. There is no doubt that they
are totally distinct diseases, but still there are
points of resemblance as far as the thyroid is con-
leamed. The points in exophthalmic goitre which are interesting, are the suspensions as to the mode in which its thyroid symptoms are produced. Definite pathological lesions of the nervous system have been described, especially of the sympathetic in the neck. Keith describes a condition where he observed the cervical portion larger than normal, especially on the left side. The middle and lower cervical ganglia were enlarged and hard, and the branches which passed from them also enlarged and hard, including those to the thyroid (Reynolds' System of Medicine Vol. V. p. 345). But there may be no abnormality at all in this respect. Rickling-Hansen found the sympathetic only a little small but not otherwise altered (ibid); and from the history of origin of some cases, one is led to suspect that the lesion of the nervous system, could not be other than what is termed functional. This would occur where marked symptoms come on even in the course of a single night, as in the case of a young man after very great sexual excitement. But in other cases, the slow development of the symptoms, such as exophthalmia being present alone first, and preceding the other symptoms by some time, would lead also to the suspicion of some definite and progressing lesion. An attempt has been made to create the lesion in the medulla. An experiment was performed by Richters, in this direction, and he found that in rabbits, section of the anterior portion of the rehiform bodies,
without further injury to the medulla, excited rapid action of the heart along with exophthalmos, and rarely even enlargement of the thyroid. (Tiemann, Cyclopedia of Medicine, Suppl. Vol. p. 606) The rapid action of the heart was due to division of the vagus. The exophthalmos, the result of vascular engorgement, it was believed, was said not to be due simply to the sympathetic, for it occurred although the sympathetic in the neck was previously divided. Enlargement of the thyroid was not once only, and there after an extensive galvanic caustic operation on the mediastinal bodies. From these experiments he supports the theory that the position of the lesion is in the medulla. Wherever the lesion be, the enlargement of the thyroid is admitted to be due to an abnormal action of the nervous system.

Where-in does this enlargement differ from that of endemic goitre? It differs in an essential way. In both it is vascular with the same tendency to fibrous formation from increase of connective tissue elements. But in exophthalmic goitre the enlargement of the thyroid is modified and controlled by the other pathological conditions, especially those of the heart and blood. Occasionally, however, the condition approaches to that found in endemic goitre - the tumour growing to a considerable size. Basedow found that in one case the gland was enormously enlarged, and filled with hydatids, the veins being all varicose, and Braël also found a very large tumour, the right lobe of
The following case is interesting in this relation:—
M. J. 38 Oxford Street. A girl, aged 10. In general appearance the patient is rather dull-looking; but is not anaemic. She belongs to a strumous family. On going over her systems the following points were found to be abnormal.

Right over the trachea in the position of the thyroid, there is seen a small tumour. This is rounded, elongated slightly from side to side and elastic. It moves with the trachea in deglutition, and there is no doubt it is an enlarged isthmus. The lateral lobes of the gland are normal. This condition has been noticed for the past month, and has probably been there some time longer.

The heart presents a condition similar to what is found in exophthalmic goitre. The chest wall is very thin. Nothing abnormal is found on palpation or percussion.

On auscultation over the mitral area, the two sounds are very loud and distinct, although this may be partly accounted for by the thinness of the chest wall. There is no murmur; but the sounds, especially the first, are of a higher tone than normal. On passing upward the base, the loudness of the sounds increases. In the aortic area, this has somewhat diminished; but on passing over to the pulmonary area, they reach their point of maximum intensity. The pulse beats are 120 per minute and rather small with good tension. (Excitement was excluded in examining the heart.)

The mental condition of the child also presented some
abnormalities, I noticed that she was very slow in answering questions. This characteristic was present in all her actions. Her mother says that she is quite alone in the family in this respect. Though slow, she states that she is not stupid, standing well in school; but I think there is some impairment in mental capacity. This case is one I think you accidental complication of goitre. There is no encephalæma, and the cardiac symptoms passed off in a short time with tonic treatment leaving the goitre in status quo, which was not treated at all.

In all these cases, described before, of goitre, it is evident that an influence passes from the pelvic organs of the female through the nervous system. The mode in which this acts is a matter of speculation only. According to Tucker (text-book of physiology, latest edition p. 682) the pregnant uterus is closely associated with the sympathetic in all its junctions, and also with the spinal cord. From the spinal cord centre there are said to pass two nervous tracts, one along spinal tracts by branches of the caecal nerves, and the other along sympathetic tracts by nerves passing from the inferior mesenteric ganglion to the hypogastric plexus. The movements induced by stimulating these tracts are said to be different. The sympathetic is said to be vaso constrictor in character whilst the spinal is the opposite, but the relations are as complicated and as yet not properly undere
stood, that no definite line of action can be laid down. We must at present be content to say that the uterus influences the thyroid through its nervous mechanism; but along what tracks it is impossible definitely to say.

Some facts would seem to point to an influence proceeding from some induced abnormality in the spinal cord. This may be illustrated by the following cases:—

In one case which I have seen, Mrs J., there was a very large tumour of the left side of the thyroid, the other parts being normal, which dates from an attack of scarletina. Her children were ill, and she, after bleeding them, herself caught the disease. Since then the tumour has been slowly increasing. She had not had any more children since having the fever. She states that in warm weather the tumour increases in size, and she has observed that since the goitre has been present, she can never perspire, do what she will, this being quite different to her nature in her pre-goitreous condition. She is a very intelligent woman and there is no doubt these observations are correct. Ford (Textbook of Physio, p. 388-390) shows that the act of sweating depends on the central nervous system, the locality of the centre or centres being doubtful, some placing the principle one, like the vaso-motor centre, in the medulla, others considering that the centres are more generally distributed over the spinal
In another case, which I have had, the symptoms point perhaps more closely to an affection of the cord. This is the ease of the man in whom a goitre—a not very great enlargement of the isthmus—is complicated with epilepsy. Under ordinary conditions he has no trouble with this his respiration; but after an epileptic bout, there is great difficulty of breathing which gradually passes off, usually in 1 or 2 days. The condition of dyspnoea is not altogether explained by a temporary increase in size of the goitre, for this is apparently slight. It is however present, but in addition there is a temporary paralysis in the vocal cords.

Here is, then, a disturbance which is of central origin, and which even in its effect on the goitre shows that it is not so passing and transitory as the general congestive effects of the epilepsy. The symptoms, indeed, point to distinct functional disturbance in the medulla.

In another case a woman was operated upon by Mr. May, Birmingham. (Birmingham Med. Review for November 1884, p. 213) on account of a goitre implicating the right lobe of the thyroid, and causing severe symptoms of dysphagia. The presence of the tumour was supposed to be the cause of the difficulty in swallowing; but the result of the operation in this respect was disappointing. The difficulty was lessened a little; but at the time of writing chyle persisted, "confirming a view," says the surgeon, "which I had also previously..."
Clinical evidence in exophthalmic goitre points in somewhat the same way to the medulla. Change in pitch in the voice has been referred to a central degeneration in innervation and O'Neill has observed a case of diabetes and exophthalmic goitre occurring together and causing the patient's death. This evidence however must be accepted with the remembrance that diabetes may not always be supposed referred to the medulla.

I have noticed cases where severe dyspepsia occurred with each menstrual period. The goitre which was present, certainly increased at that time; but I think that not to that entirely were the symptoms due. I could not help comparing the condition with cases of Menstrual Asthma which I have seen, and putting it down partly to central disturbance.

From this discussion I must pass on and briefly give a short description of the remainder of the cases, of the character which the disease presents here as a whole. The 100 cases may be thus divided:

<table>
<thead>
<tr>
<th>Date of origin of tumour</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy</td>
<td>38</td>
</tr>
<tr>
<td>Menstruations, Decline</td>
<td>21</td>
</tr>
<tr>
<td>(a) Before</td>
<td>11</td>
</tr>
<tr>
<td>(b) After</td>
<td>10</td>
</tr>
<tr>
<td>Males</td>
<td>4</td>
</tr>
<tr>
<td>No History (definite)</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
All of these divisions have been described before, except that in which there is no special history. To be discovered and the males. Two of the male patients have been described. The other two were boys. One of these, 11 years of age, had an enlargement of the isthmus, which was not associated with any other special feature in health. His mother, however, had a goitre and is hypochondriacal. The other was a lad, age 16, suffering from dyspepsia. In this case the right lobe was enlarged slightly and in a less degree the isthmus. It looked as if the left lobe was also going to be involved by extension. Of the 14 cases in which no very special history could be ascertained, there were mostly very old women, who could give no connected account of the tumour at all. About 3 of them had some indications of being related to pregnancy in the ordinary way; but as this could not with certainty be ascertained, I did not include them. In 4 of these cases, the disease occurred in married women, coming on rather late in life, as a rule when they were between 30 and 40. The tumour, in all was very small, its growth being very slow, and in all cases was associated with a cessation from childbearing.

**Part of Gland Affected**

The part of the gland which is said to be most generally affected, is the right lobe; but, though this is very frequently enlarged by itself, it is much commoner, in the natural state, the right
The right lobe is larger than the left, and this is the reason that when, both lobes are affected the right is usually the larger. This difference may be seen in a developing tumour; for there may be often noticed a distinct enlargement of the right lobe, causing a bulging on the right side of the neck, some considerable time before a similar appearance is seen on the opposite side. In some cases the enlargement includes the isthmus but it is almost as frequently found not enlarged. In their growth there are considerable fluctuations which do not seem to obey any definite law. This is seen where the growth is young and very vascular, by one day the tumour will be of moderate size, and not very tense. Next day it will have increased greatly and feel quite tense. I have seen these fluctuations take place during the course of an attack of diarrhea when the patient was reduced to a weak state. This uncertainty which sometimes occurs in their daily history is also seen in the life history of many tumours which arise and run a short course, and spontaneously disappear.

The following table gives the frequency with which the various parts are affected.

<table>
<thead>
<tr>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Lobe Alone</td>
<td>20</td>
</tr>
<tr>
<td>Isthmus</td>
<td>22</td>
</tr>
<tr>
<td>Left Lobe</td>
<td>6</td>
</tr>
<tr>
<td>Whole Gland</td>
<td>26</td>
</tr>
<tr>
<td>Right + Left Lobe</td>
<td>22</td>
</tr>
<tr>
<td>Right + Isthmus</td>
<td>2</td>
</tr>
<tr>
<td>Left Lobe + Isthmus</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Enlargement of the isthmus is nearly as frequent as that of the whole gland. In many cases, it is seen to be the most persistent part of the whole gland. In many cases, it is seen to be the most persistent part of the whole gland. In many cases, which I have seen, it feels much firmer than the lobes. This may be in part apparent only from its being closer to the surface and more easily palpated, but this cannot be altogether the reason, for in cases where the whole gland has been enlarged, the isthmus is the last portion to yield, and in some cases persists as a distinct bulge up the anterior part of the neck after the enlargement of the lateral lobes has entirely disappeared. Indeed, by the usual method of treatment here - iodine paint, which is very successful in most recent cases - the more obtuse character of the isthmus is seen. It is not my object to enter into the pathological anatomy of the tumour. It is sufficient to state that it is a fibrous degeneration, a cirrhosis of the gland from long continued congestion, and in the isthmus I believe that this change takes place sooner than in the lobes. After being treated and cured, the tumour, under special circumstances, sometimes reappears, but usually it does not, even although the patient live in the porphyric locality. I must now pass on to the concluding remarks, which passing over the symptoms of the disease, which with the exception of a case here or there, are neither dangerous nor of much interest: It is wonderful, indeed, considering the numbers
affected, that serious complications are not more common than they are.

**Conclusion**

In concluding this paper there remains to be considered the character of the influence that produces goitre in its endemic aspect. It has been already stated that probably there is no relationship etiologically between this affection and cretinism; but that, in a goitrous locality, other things being equal, the cretin will more readily develop a goitre than an individual in average health. I think that it is also perfectly evident that neither geological structure nor the character of the water supply have any very special influence in the causation of cretinism. The relations of this disease also to malaria (meaning by that word the conditions necessary to give rise to intermittent fever) are, at least in this country, probably in no degree causal; although this endemic influence may, e.g., Bengal, act as an aggravating circumstance. It remains, then, to discuss the climatic condition which may give rise to cretinism, and which I believe to be a local modification of the rheumatic condition, placing its relation close to chronic rheumatic arthritis. That this is, however, the cause of every case of cretinism, I should not like to say. Especially in the case of sporadic goitre, it no doubt appears, like other conditions of tumour growth, under conditions of uncertainty or to any original cause.
one point in the pathology of acute rheumatism which
I wish to draw attention to, is its relation to the central
nervous system. The upper segments of this system seem
to be especially liable to be involved in rheumatic
affections. One theory as to the character of the lesions in
the joints depends on this—that the centre controlling
the nutrition of these lies somewhere in the medulla ob-
longata, and certainly the joint lesions are not cases
of simple synovitis.

Closely related to the effects of rheumatism on the central
nervous system is the connection that exists between
rheumatism and chorea. This has been observed for
some time, and although it is not agreed as to the exact
nature of the lesion in the nervous system, the relation
between the two conditions is admitted. In speaking of the
age at which chorea appeared in young girls, I remarked
on the similarity between them and the age when chorea
is most frequent. The two diseases also bear a relationship
in regard to the sex which they attack, occurring much
more frequently in the female. Why should chorea
occur with greater frequency among females, when both
sexes are subject to rheumatism in nearly equal
degree? This difference may also explain the marked
abundance of chorea amongst girls as compared
with boys. Evidently, the distinguishing differences between
the sexes, though they may be partly at this period
talent, have their effect in directing the mode in
which the same pathological tendency manifests
itself.

But before going further, I must explain my position
in grouping together Acute Rheumatism and Chorea, and Chronic Rheumatic Arthritis and Bronchocele. I shall first speak of the relationship between Acute Rheumatism and Chronic Rheumatic Arthritis. It is stated by many that they are pathological different aspects of the same disease—that Chronic Rheumatic Arthritis is simply a form of rheumatism. This, however, I do not quite agree with. I am inclined to follow Dr. Brodi in referring Chronic Rheumatic Arthritis to a definite lesion of the trophic part of the cord governing the joints. This however must be associated with a peculiar diathetic condition which gives a predisposition to arthritic affections. Given this condition of constitution, many influences may bring about a pathological manifestation of it. Not only may conditions of exposure; but also sources of reflex irritation within the body. The position, then, which Acute Rheumatism takes, is that while probably it is a distinctly different disease, it has as one feature of its pathology an affection of the same part of the cord as that which is abnormal in Chronic Rheumatic Arthritis. The joint affections in both are probably the result of central trophic disturbance.

There is no close relationship at all between Chorea and Bronchocele, but they show the points of agreement which I have before mentioned, and this placed side by side by the rheumatic origin of Chorea in many cases is interesting, especially etiologically, as one sees Chorea.

In Chronic Rheumatic Arthritis, I however, think
that Bronchocele is closely related. I put it down as a change of type in this disease.

In one case which I had, a woman was attacked with rheumatic pains in her joints, one month after her confinement. She was the subject of a goitre, which, instead of diminishing as it had done after her former confinement, remained quite as large. After a month or less by change again, the rheumatism left her, and at the same time the goitre began to diminish. I have had cases too, where the goitre was first observed after an attack of scarlet fever, and was accompanied by rheumatic pains in the joints. In one of these the patient had had two children without any sign whatever of a goitre; but after the scarlet fever one appeared, and followed after that the usual course with her pregnancies, increasing and diminishing as I have described before.

Goitre, also, like rheumatic arthritis, shows a great relation to reflex influences, especially, the reproductive system, both in the physiological state of pregnancy and in pathological states of irritation. The tissue changes here are those of degeneration. In one family I have seen a daughter with goitre apparently in good health—the mother, with an ovarian fibroid (as mentioned before) and a small enlargement of the intestines—and a son a sufferer from nephritic colic, which was due to the formation of calculi in the pelvis of the kidney, composed of urates. The significance of this, I think, has yet to be worked out. We know of the marked
prevalence of urinary calculi in different districts, such as N.S. England, in Norfolk, and in parts of Bengal. Malaria has never been shown to be the cause of this. I am not aware that it has ever been attempted to be shown. It seems to me that the law of natural selection has a range, wider than the physiological development of species—or their decay. It may yet help us to trace the modifications of allied diatheses—and they very frequently are the result of climatic selection—to observe that constitutional conditions formerly identical, may, from changed surroundings, evolve new types of disease, as they were before themselves evolved.

That the degeneration in the thyroid is controlled by the endocrine function in the cord, and is not the immediate result of a generally acting cause, is, I think, indicated by the partial manner in which the gland is very frequently affected. I shall mention one case in particular which I have seen with rheumatic complications. It is that of a girl, age 19, living at 22, Burley Rd. Her father suffers from chronic rheumatic arthritis. She herself when a young girl had an attack of rheumatic fever. Subsequent to this when she was about 15-years of age, she had an attack of rheumatic fever. A short time ago she was again attacked with rheumatic fever, and simultaneously there appeared a swelling of the thyroid gland, in its whole extent, but more prominent over the isthmus. The girl herself is neither anaemic nor weakly. I have another case of a woman who stabs that
when a little girl she had rheumatic fever. Some time afterwards she had chorea and about the same time a goitre developed.

I must say, however, that such cases are not common, but I think that they are significant.*

I have been the case of a family where the mother was goitrous, a son goitrous, and a daughter the subject of acute rheumatism. In another case a father was crippled with chronic rheumatic arthritis, and the daughter had a goitre, and other instances might be mentioned of individuals living under precisely the same conditions, and members of the same family, one goitre would have a goitre and the another chronic disintegration of the joint.

I think that I have sufficiently dwelt upon the reflex action of the female organs in producing goitre and have fully considered the relation of this to other dystrophies having a similar origin, such as those of the joints.

Passing on to a consideration of the condition of the nerve centres, the first point which indicates that these are affected is the study of the disease in relation to pregnancy. The action is reflex, and there it must have some point to which the efferent impulse is sent, and from which the efferent impulse reaches the thyroid. This series of cases carries us further, and other considerations must lead us to form some idea of the point of disturbance. Naturally the upper region of the cord would be surmised as the seat, from the position and nervous relations of the thyroid. In the case of epilepsy and goitre, existing in the same

*Note. Cases with a direct rheumatic history with goitre following the rheumatic fever are often seen. Since writing the above I have met an exactly similar case in a girl...
patient, which I have described before, there is an impression given, which lasts for 9 days, after other effects of the epilepsy have subsided. What this impression is, I have indicated before, that in the outburst of nerve energy, which constitutes the epileptic fit, the already abnormal medulla fails to recover itself as soon as the other nerve centres do.

In consequence of this there occurs difficulty of breathing, which is due partly to paresis of the vocal cords, and in a slighter degree from increased engorgement of a pôle of the isthmic, both of these conditions being central in origin.

I have come across another case of epilepsy, complicated by pôle, in which the same difficulty of breathing occurs, but in this case, the whole difficulty seems to be due to the pressure of the tumour. The respiratory trouble lasts too long, however, to be simply a passing congestive effect of the epilepsy. Since the affection of the nervous system which produces a fit is so wide spread, it may be that the abnormal condition lie pôle may be somewhere else. In the hippocampus Major, there is said to be a centre which has some relation to the vasomotor centre. (Benedikt). I have observed, as an after consequence, in one case of compound fracture of the skull, situated completely posterior to the motor region of the brain, atrophy of the muscles of the opposite, which were left in exactly the same condition as after anterior polio-myelitis. I merely mention this to show, that the position of any central lesion is not always
very certain from even well-marked clinical symptoms. The significance of even well-marked bulbar symptoms may not point to actual disease of the medulla itself, as the following case will show, of which a short account is given Kiernan, System of Med. Suppl. Vol. p. 561. Kirkhoff observed a case in which the clinical history of bulbar paralysis was produced by a unilateral lesion of the tonsillar nucleus. At the autopsy the posterior two-thirds of the right corpus striatum presented an abnormal appearance. A degenerate spot was found surrounded by a firm sclerotic wall upon which a vascular membrane was found, whilst the microscopic examination of the pons and medulla was entirely negative in character. This case must be looked upon as exceptional; but it must be borne in mind that clinical symptoms only are brought forward.

Nevertheless, all the nervous symptoms, which I have observed in connection with jujube, which can be referred to a central disturbance, point to the medulla as the part affected. I need only refer to the cases, where, in one, the lesion was situated with chief persistent symptoms of dysphagia, evidently central in origin; and in the other to the modification of the deceasing junction. I am not disposed to value these instances at more than their worth, or make their importance less prominent; but they are symptoms, and must be considered according to our physiological knowledge, and their due significance accorded them.
From all these facts, then, I am disposed to consider the puerperal diathesis as a change in type of the arthritic diathesis. The question of the degree to which climatic associations have in forming diathesis diatheses I shall not enter upon; but it is certainly great. We have not only tendencies to special forms of disease developed in races, but also immunity to other forms of disease, such as the freemasonry which is found amongst some Indian races {same word multiple times}. I have incidentally mentioned the endemic character of calculus in the bladder, when speaking of the relations of diathesis to each other. I am not prepared to state that there is a relation between this condition and the Pomehoree diathesis. I have not looked enough for that; but I am of opinion that the great law which Darwin applied to the progressive development and variation of species, has yet to be traced in its influence over what we are pleased to call constitutional tendencies to disease. I must, however, carefully state that I think limit these remarks to conditions of our organization which are climatic probably in their first origin, and not to what I may call accidentally developed conditions such as the syphilis.

In concluding I may state that when we look to the great influence which reflex irritation has in the formation of a pox, especially the influence of the female pelvic viscera under various conditions, and
and with these loss, the frequent partial affection of the
organ, it seems impossible that there can be a
definite materiae morbi

The Welsh inhabitants here are inclined to refer the
appearance of the tumour to their habit of wearing
weights on the head; but as this custom has very much
died out, and many have poïbres who never did so,
this must be a mistake.

It is interesting to note the results of treatment especially
when the patient has continued to reside in the poïbres
locality. In young girls especially, if iodine painting
is adopted, the tumour in the majority of cases
disappears. This is the treatment universally in
vogue here, with sometimes lodicatum potasium
internally. The slowly arising growths in older
women are not so amenable to treatment by iodine
and even in younger subjects the more active
character of circumscribed enlargement of the
isthmus is seen. The point to be noticed however
is that: the poïbre which has been cured does not
generally return even although the patient continues
to live in the locality. But of course there are many
neglected cases, and these furnish the largest specimens
of the disease. The point in the treatment of poïbres here
is the treatment of Welsh prejudice and ignorance
amongst the collier population. Any more radical
method than iodine painting is out of the question
here.

But I might refer to the treatment of poïbres symptoms
arising owing to pressure. These happily are not very
common. Supporting the haemorrhage so as to obviate
the deeper tissues is sometimes useful. I have
seen bad cases, (usually associated with metastasis)
of dyspnæa, relieved by morphia, although this
must be given with care. I have not had occasion
great to use any severer measure.

I thus think that Bronchocele is a hypertrophy of nervous
origin, and that the lesion of the nerve centres is placed
down here in the medulla. Horrell Mackenzie (Diseases
of Throat, vol. ii, p. 439) mentions a case of a severe
wound in the neck, in which the pneumogastric
nerve was injured and where he found an enlarge-
ment of the thyroid. It is doubtful however if
much more can be learned from this case. I
place the diathetic condition near to that of Chronic
Rheumatic Arthritis, owing to the characteristics
which I have described before. There is often, this
not always a decided rheumatic history. I have
just seen a boy who has a forie developing some-
what rapidly after rheumatic fever, he having been
free from it before. This and other facts seem
to link Bronchocele both with Acute
Rheumatism on the one hand and with Chronic
Rheumatic Arthritis on the other.