A Thesis on

The Thyroid Gland, and its Diseases.

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by

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Description of the Thyroid Gland.

Anatomy

The Thyroid Gland is situated in the Anterior part of the neck in close relation to the front and sides of the wind pipe. It is usually described as consisting of three, and sometimes four parts. Mr. Adams calls the transverse lobe, median lobe, lateral lobe, and sometimes a middle lobe or pyramidal. Viewed as a whole, it is cone in front and on its sides, and forms a more or less well marked projection on the trachea and larynx. Each lateral lobe is somewhat conical in shape, with the apex
pointing upwards, and is about 9 inches in length, 1/2 inches in breadth, and 3/4 inch in thickness at its largest part, which is near the base. Anteriorly, it is covered by the Sternothyroid, Sternothyroid and Omohyoid muscles; posteriorly, it rests on the trachea and larynx and its posterior border comes in contact with the sheath of the great vessels of the neck. The extent of the lobe depends upon the variation in its size, but usually it reaches from the center of the thyroid cartilage above, to the 5th or 6th ring of the trachea below. It covers the inferior curve of the thyroid cartilage, as well as part of its ala near the posterior border; it may extend as far back as to touch the pharynx. The transverse part, or isthmus, is somewhat flattened in shape and is usually about 1/2 inch in breadth and from 1/4 to 3/4 inch
in depth; it unites the lower ends of the two lateral lobes and forms the 2\textsuperscript{nd}, 3\textsuperscript{rd}, and 4\textsuperscript{th} rings of the trachea. Sometimes only the 2\textsuperscript{nd} and 3\textsuperscript{rd}; sometimes only the 3\textsuperscript{rd} and 4\textsuperscript{th}; that it is very variable in size and position and in some instances has been found to be entirely absent. Occasionally, perhaps in very thin cases, a slender conical process arises from the upper border of the "isthmus" or the adjacent portion of the lateral lobe; this is called the "middle lobe" or "pyramid." It is very variable in shape, size, and structure. Sometimes it is split in two, sometimes it is entirely detached, sometimes it is entirely fibrous, at other times partly glandular in structure. In many cases a few bundles of muscular fibers usually derived from the thyrohyoid muscle, though occasionally independent, pass downward from the hyoid bone to be attached to some part of the thyroid gland, or its pyramid. This muscular structure is called the "levator glandulae thyroidea." In many instances a fibrous band takes the place of this small muscle.

The gland is supplied with blood by 2 pairs of arteries: the superior thyroids derived from the external carotids and ramifying chiefly on the anterior surface; and the inferior thyroids, derived from the subclavian and ramifying for the most part on the under surface. Occasionally a third artery, the Arteria thyroidea dextra, an inconstant branch of the Transversus arteriae, ascends in part of the trachea to the thyroid gland. All the thyroid arteries, and many large and rare unusually fee anastomoses, they
terminate in capillaries forming a compact network in the connective tissue surrounding the thyroid vessels. These veins, which are also unusually large, form pleueas on the surface of the gland from which arise the superior, middle and inferior thyroid veins on each side; the two former pass to open into the internal jugular vein, and the latter, descending upon the trachea, passes to open into the innominate vein on its own side.

The lymphatics are very numerous and large; they arise in the connective tissue between the blood vessels but with which they apparently have no direct communication—and after forming a dense network of one or two knotty trunks on the surface of the gland, they pass to terminate in the thoracic and right lymphatic ducts and deep cervical glands (Encyclopedia of Anat. & Physiol. page 1107)

The nerves arise from the middle and inferior cornial ganglia of the sympathetic, and accompany the blood vessels to form a superior and inferior pleueas, and here are found ganglionic cells interposed in their course. They (Anat. & Phys. p. 698). States that nerves are derived from the pneumogastreus and handfield trunks, and found filling the trunks passing from the recurrent and external large vessels of the pneumogastreus (Encyclopedia of Anat. & Phys. p. 1107); but this point is doubtful + Sekani & Jones, p. 5098. See also. Anat. & Phys. p. 698, & 735. Ellis & Ed. M. pp. 67, Ellis & Ed. M. pp. 18.

Structure

On naked eye examination, the thyroid gland has a reddish brown colour, is firm consistency, and is a coarsely gran-
ular appearance. It is closely invested in a thin transparent capsule of connective tissue, which unites it with adjacent structures, and by passing inward divides the substance into small lobules, which however are not very definite and cannot be separated from each other. In section, a yellow, golden fluid escapes from the cut surface, and the gland is seen to be made up of closed cells, or acini, many of which are just visible to the naked eye. Separated into irregular groups or lobules, and from one another by processes of connective tissue passing inward from the investing capsule. The size of the vessels varies much, being said by de la Barre (Anat. 1877) to vary from 3/16 inch to the size of a millet seed. The shape is also very various, partly from the result of mutual pressure, and is described as being oval, spherical, elongated, polyhedral, or flattened. Each acinus is lined by a single layer of cubical or columnar epithelial cells; but whether these are located on a basement membrane or not, is a doubtful point. Turner (Anat. 1868, 1879) and Gray (Anat. 1877, 1879) assert the presence of one, but Baber (Quain, Anat. 1851) and Pernecolli (Turner, Anat. 1868) deny its existence.

All probability it is absent. Of course, the cells rest on the surrounding connective tissue containing the componenent of the blood capillaries and the lymphatics, latter being in very close relationship to the wall of the acinus and sometimes projecting through it. The contents of the acini consist of a yellow, translucent, viscid fluid of a jelly-like nature (coagulated by heat and nitric acid and alcohol) but the albumen is not in
The ordinary state of solution, gelatine, is sometimes present, as are chlorides of bismuth, triple phosphates -

Soda

tris of Calcium

In addition, detached epithelial cells, white blood corpuscles, and sometimes red corpuscles undergo various changes of disintegration and decolourisation. (Baker Lancet 1853 vol II p 1024) are found.

The weight of the gland is usually from 1 to 2 ounces, and is normally in women than in men. In infancy and during fetal distane, it is relatively larger than later on in life.

**Development**

According to Handfield Jones (Sneehop Anat. Thes. p 1107) the thyroid gland is developed by 2 lateral lobes, which are subsequently united by the isthmus. This theory is supported by the fact that in several of the lower animals the lateral lobes continue permanently separate, and that occasionally the same condition occurs in the human subject.

Jones has observed that in a fetus 4 1/2 months old, the embryonic thyroid consisted chiefly of "nuclei", which were some setent connected together so as to form solid globular masses, not definitely separated however, but surrounded by a homogenous envelope. In a smyrnian sheep 14 months old, there was hardly any tendency to the follicular arrangement, and the gland consisted chiefly of "nuclei" with a little granular matter, while being surrounded by a homogenous membrane. He considered that the follicular cavities are developed by liminary envelopes being formed round the original "nuclei", which assume the arrangement of epithelium.
Prof. Turner (Introd. Human Anat. p. 385) describes the thyroid gland as arising from a rounded mass of mesodermic cells situated in relation to the 1st pair of vascular arches, into which mass is prolonged the hypoblastic lining of the pharynx, showing thus that the vascular connective tissue of the thyroid is of mesodermic origin, while the cellular lining of the vessels is derived from the hypoblast.

These views are therefore antagonistic, as does consider the primary cellular mass (or "nuclei") form the epithelial lining of the vessels, whilst Turner states that it is of mesodermic origin and forms the connective tissue surrounding the vessels. It is impossible for me to say which is the real mode of development, but that, describes Leyden's is the one I am inclined to believe as true.

**Comparative Anatomical Study**

The representative beginnings of the thyroid gland are noticed in some fishes and reptiles, and in birds, but the gland is only the recognized without ambiguity in the mammals, where it is found to exist in all families, present in some of them interesting peculiarities, but invariably having the same structure.

In this class there may be some doubt as to whether a true thyroid gland exists, and it is certain that many families are without it. Mr. Simon (Principles of Phyl. p. 1159) believes that he has discovered it in many fishes. e.g. bass, pike, cod, haddock, pollack, etc. Sturgeon, sharks, and skate, and with inconclusive evidence in the ganoids. Scorpius, balaenoptera, and lamprey. He states that the
land occupies one of these positions, viz. a single body situated in the median line in connection with the branchial arch, whilst the body in question being on each side near the posterior extremity of the 7th branchial arch, thus differing from \(7^1\) where it was situated near the anterior extremity. - 3. The land is placed in the same duplicature as mucous membrane but more posteriorly and nearer the palate. - Interpreting this variety of position, \(7^2\) Simon considers that they agree constantly in one point viz. that they derive their vascular supply from the 7th branchial arch and are thus brought into connection with the enchondral nervous enteric system by nutrient vessels having a common source.

Prof. Owen (Sneyd's Anat. Phys. 1859) does not believe that the bodies described by Simon in his 2nd and 3rd divisions are analogues of the Thyroid, but considers them to be pseudobranchia and states that in oecanth fishes, they are diverticula of the pharyngeal circulation and not of the cerebral. He considers the "false gullet gland of Retzius" - corresponding to Simon's 2nd division - is what most nearly represents the Thyroid. Thirdly he suggests that it may be more properly regarded as an analogue of the Thyroid, on account of its relation to the pharynx and great vessels.

Handfield Jones (Sneyd's Anat. Phys. p. 118) after having examined specimens in the 3 classes of Simon states that from their structural changes. Character there is no evidence to prove that the pseudobranchia are the representatives of the Thyroid; and that occasionally organ, which seems to be of a totally different kind, is found, which closely resembles the Thyroid, when it unquestionably exists.
As an example of Simon's first class, he examined the Skate, here he found the "Salivary gland of Petrius" and the "Hyoid of Simon" to be one and the same organ, situated exactly upon the terminal division of the branchial aorta, having a pledal greyish-brown conglomorate appearance externally. It consisted of numerous small, sub-spherical vessels, lengthening half an inch in diameter, surrounded by a structureless tunic, and lined by a stratum of epithelial substance, consisting of nuclei and granular matter. He found no trace of ducts of any kind; therefore believes that there was no relation between this structure and a salivary gland, but that it belongs to the class of ductless glands. Besides this body, he discovered at some distance behind it, and just at the junction of the branchial arches anteriorly, a small reddish mass, which was covered by a thin fascia and by a mucous membrane. It consisted of vesicles about 5/100 inch in diameter, formed by a structureless liminary tunic thickly lined with epithelial substance. The pseudo-branchia situated in the anterior wall of the spiracular canal was manifestly of an entirely different structure to the organs described, and consists of small flakes of mucous membrane covered by a kind of pavement epithelium (Crowe komplanat Phys. of Intercalata, Vol. 5, p. 804). In a dogfish he found the pseudo-branchia small but distinct; no trace of the Salivary glands or of a small one behind it, as seen in the Skate, were to be found.

As examples of class II he (H. Jones) examines the Cod and Whiting, here he found the pseudo-branchia as described by
Simon situated in a recess bounded below by the sail and above by the upper extremity of the transverse fold of mucous membrane which limits the extent of the palate. It describes this body as being 

of a light brown color, semi-transparent, flattened so as to present two surfaces, the about 1/20th known thickness, and to have an uneven surface. It was enclosed in a capsule containing large vessels permeating through it. In structure it appeared to consist of parallel folds of homogeneous membrane, comes by a thick layer of epithelial cells of a large angular irregular shape and distantly distinguished by a line with a vascular plaque. The epithelial cells seemed to form a layer of some thickness filling up the intervals between the adjacent folds of the homogeneous membrane. From this structure he considers these forms like cells (presenting a glandular appearance) and that there is no sufficient reason for considering them to represent the hyroid which they differ from so clearly in minute structure. In the Eel he found between the two branchioposterior branchia a small mass consisting of fat chiefly, but containing some large vessels closely surrounding them of the real hyroid. They had a homogeneous membrane lined by epithelium and contains a transparent somewhat refracting fluid. In the Places he found the pseudo branchial consist of leaflet-like processes and to have no tendency to assume even a solid glandular form.

As an example of class II he examined the Carp and found the pseudo branchia between the anterior part of the upper extremity of the branchial arch and the posterior border of the Diaphragm muscle, and that its structure was
Entirely that of a bill (Encyclop. Brit. pp. 110 and 111) from the foregoing facts it may reasonably be concluded, 1st, that the same fishes (such as the Skate and Eel) have a structure composed of ossicles and cartilaginous discs which very closely resembles the Hyoid gill; and 2nd, that these structures are not the Salivary glands nor pseudobranchia, and 3rd, that the pseudobranchia in these fishes are not anaglogues of the Hyoid in higher vertebrates.

II. Reptiles. In this class the presence of a Hyoid body is apparently fairly constant, but it varies much in shape, size, and position. In the order Chelonida (Turtles, Tortoises, etc.) it has undoubtedly been demonstrated and may be taken here as the example of structure for the class. The gland lies between the 2 Carotids, in the median plane of the body and is usually covered by the pericardial portion of the Thymus gland. Microscopically it is found to be made up of vesicles of to 6/4 inch in diameter, closely aggregated together, of various shapes from mutual pressure, and surrounded by a little connective tissue. The vesicles are lined by epithelial cells containing a row of nuclei embedded in granular substance. The cysts contain a clear non-refracting fluid and in most there are also from 1 to 3 cloudy granular yellowish globules in various stages of development (Ewen, comp. Ant. Brit. Ind. I p. 365, and 1st. Jones, Nature, and Ant. Brit. p. 126-9.). In the Monobranchia the Thyroid is represented by 2 symmetrical bodies situated one on each side, connected with the inferior border of the hyoid bone.
In the frog it is also double on each side and situated on the carotids, close to the cornua of the hyoid bone (A. Jones, Eggymph and Thryp, p. 1109). In the lizards there are considerable varieties in the true lizard, gecko, skink, and chameleons it is single and broad; in the monitor and iguanidae it is double; in the chameleon it is nearer the hyoid bone and is underlapped or covered by the lower jaw, etc. In the frake family (Ophidieae) the stand is single and situated at the fork between the right and left carotid arteries and is directly covered on each side by the thyreus gland. (From Compl. Hist. Rep. Brit. India, 1865, 4. Jones, Eggymph and Thryp, p. 1109.)

III. Birds. In all the orders according to Jones, and in many groups according to Owen, 2 small glandular bodies are found one on each side of the trachea, very near the lower lung and frequently attached to the regular trachea: these are probably the homologues of the thyreus gland. The position of these bodies appears not to be constant. Mr. Simon (Skeleplanat, Rep. 1888) states that they always correspond to a particular spot in the vascular system, viz that each one lies in the cervical vessels of its own side and receives its blood supply just opposite the point where the internal carotid arteries divide to their respective destinations. According to Jones (Skeleplanat, Rep. 1888) the gland of a pigeon is composed of close meshes aggregated together containing a "kind of epithelium" and invested by a close capillary network applied over their homogenous envelope. In the Gannet there are 2 similar bodies.
attached to the upper part of the annunciation of each cone (Ibn, Compt. Nat. Rep., v. 1, p. 230).

Mammals. As before stated the thyroid gland can only be studied without ambiguity in the Mammalia. In this class it is locally related to the windpipe except in the M. philippinicus, and consists in all the members of a pair of elongated masses, which are in some, especially the higher eutherianous mammals, united by a transverse band or formus of similar structure to the rest of the gland. The minute anatomy has been already described under "structure of the thyroid gland." The peculiarities in this order consist in the various situations in which the gland is placed, the size and shape of the lobes and formus, and the presence or absence of the formus.

In the thymus, the thyroid is represented by 2 bodies, extending between the capula and thymus, and is of a rounded, oval, flattened structure and of firmish consistence. Mammals have the lateral lobes in a more constant relation to the windpipe and for the most part united. In the Tasmanian opossum they are free and separate. In theombat they are of dark colour, elongated, and reaching from the hyoid cartilage to the 7th tracheal ring or side. In the kangaroo they are similar. From the 5th to the 9th tracheal ring in the Kangaroo they are small and ununited (Ibn, Compt. Nat. Rep., v. 1, p. 358) in the Kalahasti philippinica they are united by a filamentary band passing between their lower extremities, across the 7th tracheal ring.
Rodents have lateral lobes present in normal proportions. Each lateral lobe is usually elongated and nearly cylindrical, but expanded at its lower end, where it almost all cases it is united to its fellow by an isthmus. In the hare, at the otter, the isthmus is thin. In the rat, it is normal it is thickened and thick. In the Cape mole (Pachypus), the isthmus (Turner, 1916) and Geomyis the isthmus is apparently wanting.

Cepoidea (Rats) the lateral lobes are generally united. Reptiles (Elephants) have the lateral lobes situated opposite the 6th and 7th tracheal rings, no isthmus is present. Dolphins have the lateral lobes ununited and situated rather further away from the windpipe than usual. Some have the lateral lobes rounded shape and ununited.

Ungulata have the lateral lobes ununited by a thin keratin band. In the rhinoceros they are elongate sub-triangular, and extending from the sides of the larynx to the 4th tracheal ring. In the horse, the isthmus is situated at the 3rd tracheal ring and the lateral lobes are egg-shaped, in the ass the lateral lobes are crescent, smaller. Ruminants have the isthmus fairly broad, and the lateral lobes as a rule elongated. The llama however has the isthmus represented by a thin filamentary band and in the camel no isthmus has been observed (Turner, 1916).

Campanora. Beasts have the lateral lobes united at their bases or united by a long slender band. The bat family has a relatively small isthmus, which tends to elongate
and become more tender as age advances. In the
liver biliary canals noticed 3 distinct writing bands
Dog liver 17° 30' Buffer Anat. 3.368
Primitve. The liver has the lateral lobes planigram
flattened triangular shape—lying upon the sides
of the liver from the 2nd to the 7th ring, and united
by an othmmus.
Quadrumana have the lateral lobes united by a longer or
and narrower lumen than that of man. In the ma-
most monkey liver has several 2 uniting bands.
(See Bigno J. Comp. Antiq. Phys. of Antebat, 187, P 363-5 &
and Turner Anat. p 308).

**Physiology**

From the foregoing account it is evident that the Hepoid
body is undoubtedly a glandular structure, consisting of sacs
(acrocolics) surrounded by connective tissue filled supplied
with blood and lymph vessels. The sacs are lined with a
layer of secreting epithelium, and contain a fluid secre-
tion of an albumenoid nature. The gland however has
the peculiar fact that the sacs are closed, or in other words,
no are no ducts connected with them by which the secre-
tion might be removed; in this respect it resembles
the Spleen, Thymus and Suprarenal Capsules, the whole
class being included under the name of "Duettis Body."
It appears that the secreting membrane in the Hepoid sacs
exercises the power of pouring out certain materials abstracted
from the blood, which undergo some change and are return-
ed to the lymph or blood without having been previously re-
more from the gland. That secretion is poured out and is capable of being reabsorbed is proved by the fact, that in certain abnormal conditions of the blood—which will afterwards be discussed—matter in excess in these conditions is quickly eliminated by the secreting membrane of the vessels, and by being poured out into the cavities, accumulates and distends them, thus causing general enlargement of the gland; but when the cause of these conditions is removed, and suitable treatment employed, the vessels reabsorb these materials, the distention and accumulation disappear and the gland resumes its usual dimensions.

With regard to the function of the gland various speculations and hypotheses have been brought forward. As examples of some of these views, attributes to it the following may be quoted from the Encyclopedia (Ship p. 1115). 1. That the thyroid has connection with the larynx, either as pouring into it through supposed ducts a fluid fitted to lubricate its lining membrane, or as forming a protection to the delicate organs of voice against the variations in temperature of the external air. These ideas are insufficiently disposed by their obvious absurdity, as well as by the facts that no ducts are present and that the relative position of the thyroid to the larynx is quite unimportant, as has been shown in birds and lower animals. 2. That the thyroid, according to Simon acts as a diureticum to the cerebral circulation exercising at the same time its secreting function in an alternating manner with the cephalic nervousness.
This theory is based on the fact that the thyroid arteries arise in close proximity to the cerebral; but variations in the rising of these vessels, occur without any harmful result following; and also it is possible that some of afferentular stream would have been better attained had the thyroid vessels below, instead of above, the cerebrum.

It is generally believed that the thyroid is connected with the organisation of blood in conjunction with the spleen, thymus, and supra-renal capsules. This view is supported by the fact that the gland is largest and most active during foetal life and infancy, when growth of the body renders a highly organised and abundant blood supply necessary; and that the gland at all ages has an unusually and unnecessarily large blood-supply for its own nutrition.

Babier (Janet 1858, Vol. II, p. 356) found in the lymphatic of the thyroid a material morphologically identical with the colloid matter contained in the vesicles, he therefore concludes that the colloid matter is formed in the vesicles and carried off by the lymphatics. He also showed that the colloid matter in the vesicles is partly composed of destroyed red blood corpuscles, which have entered the vesicles, for red blood corpuscles were frequently found in all stages of degeneration and decolonisation in the vesicles. — Has Le-Atlas no doubt that the thyroid has some influence on the composition of the blood. — The spleen is undoubtedly connected with changes in the blood, and according to McDaid (Physiology, Ed. IV, p. 485), the thyroid and thymus glands, though different in structure to the spleen, are former clod...
ly so - resemble the Spleen somewhat as far as structure are concerned. The Thymus containing Tertiary, Dianther and Repentance, with Lactic and Succinic acids; - Uric acid seeming to be absent. The structures of the Thyroid and Spleen, but apparently of the same nature. - Thus showing the relationship between the so-called blood glands.

Hunner Loven considers that the different development of the Thymus to the Spleen and Thymus is an argument against its physiological identity, along with the structural differences. (Anat, p. 585).

Complete extirpation of the Thyroid gland, and destruction completely destroying its glandular elements, will affect the general system producing a train of symptoms similar, if not identical, with pernicious; but this will be discussed at length later on.

From the foregoing it may reasonably be considered that the Thyroid gland has in some way an influence over the composition of the blood and the general nutrition of the body; but with regard to any special office or higher function, nothing at present can be suggested.
Diseases of the Thyroid Gland

Classification

1. Inflammation: Acute or Chronic
2. New formations: Adenoma, carcinoma, and Sarcoma
3. Cystic or Bronchoccele
   (a) Simple enlargement
   (b) Cystic
   (c) Fibrous
   (d) Fibroepithelial
   (e) Vascular
   (f) Cystic Cystic

Inflammation

This is a primary disease of the thyroid, to a doubtful of rare occurrence, but as the result of surgical interference it is comparatively common. It may be acute or chronic in nature, and may affect the whole or part of a healthy or diseased gland.

The causes from which it may arise are those of inflammation elsewhere, by irritation, from such agencies as cold and external violence, or in some cases no cause can be assigned. Watson (Practice of Surgery, Ed. 4, Vol. I, p. 796) and Boeckland (Principles of Surgery, Ed. 2, Vol. 3, p. 302) hold that inflammation only occurs spontaneously in sym pathetic persons.

Symptoms. Within a very brief interval swell, and very often considerably (Wade Surgery, Anat. Phys. 114, 181.)
Sinking Part Anat, Ed 2, p 659, and South's Trans of Celtic Soc Surg, Vol 2, p 653) and sometimes difficult breathing and swallowing are experienced from pressure on the lachex and asephases. General constitutional fever is present, and often a rushing sound in the ears, and hoarseness from the nose are complained of (South's Trans of Celtic Soc Sept Surg, Vol 2, p 653). The swelling is at first hard, tense, and pressure, and last, and in some cases the skin is red over the inflamed part. The texture of the gland in this early stage is firm and softened, assuming a brown red, and ultimately a dingy grey colour (Sinking Part Anat, Ed 2, p 659). If the inflammatory action be cut short the symptoms abate and a rapid recovery results; but more often the process goes on to suppuration and abscess formation. There may be one or more abscesses formed, and in some cases the whole gland may become converted into pus (Hase, Breckle Anat + Phy, p 114). Under favourable circumstances the abscess is point externally through the skin (Biblothek der Naturwissenschaftlichen Gesellschaft, New Syd Soc Trans p 169). There are however examples of the pus finding its way into the asephases, leaving a fistula (Lenger, Bericht zur Klinik der chirurg Vol 2), or into the lachex, producing death by suffocation (Hase + Breckle, Breckel Anat + Phy, p 114; and Vincent, Holomco Sept Surg Ed 2, Vol 7, p 353). Abscesses deeply seated in the gland are hard to recognize, but in consequence of the increased swelling in the neighbourhood of the lachex and asephases this is increased difficulty in breathing and swallowing. After the abscess has healed the portion of the gland affected shrinks into a hard fibrous mass, firmly adherent to
Such shrivelling in one lobe brings on wasting in the other (Jones, 
Surg. Gyn. 2640). Mr. Lascoy (Lancet 1876 161 p 243) 
recounts a case in which inflammation passed on to 
honing and considerable destruction of the gland tissue. 
I have never seen a case of access of the thyroid and 
ly in one instance have I seen simple inflammation. 
This was in a case of chronic enlargement, when the 
already diseased gland had been struck by inflammation of the 
entire gland, with pain, tenderness, and some additional swelling being the result. Under the influence of hot fomentations, the symptoms quickly 
passed off leaving the gland in the same condition as at the accident.

In before stated inflammation of the thyroid resulting from 
surgical interference for disease is of much more common 
ocurrence, it must necessarily result from such irritants as 
sepsis and injections into the gland tissue, such as iodine 
plaster, etc., or from injection of the solid tissue, such as 
iodine or bismuth. In all these cases it is the inflammation which is expected to 
cure the disease. Undesirable inflammation, followed 
by septic poisoning, and sometimes death, may result 
from such operations as puncture of cysts, partial or 
complete division, or division of the sternomastoid muscle. 
(Behren, Klein, Surug, Ebray, Schese, p. 188, 276; 3, 5). 
Treatment must be conducted upon the principles laid 
down for inflammation in other parts of the body. Malaise, 
rest in bed, and as little movement of the neck as possible, are
of great benefit. Before suppuration takes place hot fomentation
or poultices should be applied, which may be freely sprinkled with
lead and opium. If there be much pain, in some cases
when the inflammation is very acute, it will be found preferable
to deplete by means of leeches applied on either side of the
neck, or to apply cold by means of ice-bags.

After suppuration has been diagnosed, a free incision must be
made to evacuate the pus, and a suitable drainage tube inserted.
In doing this the strictest antiseptic precautions are most desira-
able; the dressing to be used must of course be chosen by the sur-
gon, and will naturally vary with the materials in force at the time. When the abscess is deeply seated in the gland
some hesitation and difficulty may be experienced in opening it; however it is much more preferable to allow the pus to de-
cape by an external wound than to allow it to burst into the
trachea or oesophagus.

Internally, the lines of treatment to be adopted are those ordinar-
ily in use in general constitutional fever; in cases of hyper-
pyrexia, quinine will be found most useful.

Should the inflammation pass into the chronic condition
counter-irritation must be applied to the skin by means
of medicinal ointments, fomentes, or blisters, and in some
cases good will result from the pressure of plaster band-
pages. Internally, iron tonics and solution of potassium
should be administered, along with a freely stimula-
ting diet.
New formations in the Thyroid Gland

Tumours of the Thyroid gland are all of rare occurrence and
may either be innocent (adenoma) or malignant (carcinoma and sarcoma) in character. Tumours apparently
by law very occasionally been observed.

Adenoma. This growth seems not to be recognised
as a distinct affection by most writers, who in-
clude it in the class of "goitre": Bryant (Practice Surg. Ed 3,
Vol. 1, p. 195), describes it as follows - "the tumour may
within the gland itself, or connected with it, or more commonly
as an intrathoracic growth; the clinical history cannot well
diagnose from ordinary goitre, but when the disease is uni-
lateral, assuming a rounded or irregular form, and appear-
ing as an isolated outgrowth from the gland itself, the nature
of the tumour may be suspected; but when it occurs within
the gland, or within a cyst in the gland, diagnosis is impossible.

Here relates a case of an adenoid tumour, the size of a grape,
attaching by a pedicle from a lobe of the gland; the gland
itself was depressed from which the tumour seemed to have
fallen out. The pedicle consisted of a large artery and the
growth itself about the summit almost was composed of a structure
like that of thyroid tissue, enclosed in an ossified capsule.
Poland, Franchi, Rakotosky and Virchow, record some but
similar instances. Paget describes these tumours as arising
from the gland tissue, which may appear in the substance
of an enlarging thyroid, but also return to, and detached

It appears, however, that these tumours are not really,
new growth as a rule. They may occur in cyst cavities
there. Probably the remains of normal gland tissue left
behind in the formation of the cyst and encapsulated with
it. The case which Bryant relates shows that the
tumour was formed by a displacement of part of the
 gland, and was therefore not a new growth.

[^1] From a present time a patient suffering
from a small firm tumour, attached to the left lateral
lobe of the thyroid by a fairly broad pedicle. As the
growth has dates from infancy, and no depression
can be felt, I believe it to be of a purely adenoid nature.

[^2] Treatment of cases where the tumour is unrecognised, from its
being situated within the gland substance, nothing naturally
can be done; but should the growth be external and isolated,
it may be dealt with comparative safety. It is not how-
 ever desirable to interfere unless urgent symptoms arise,
or an urgent request be made by the sufferer to have the
tumour removed. In performing such an operation
the tumour should be exposed by a free median incision,
the pedicle incised and enclosed in a double ligature,
and the mass cut off.

[^3] Carcinoma is a fairly rare affection of the thyroid, but
it is considerably more frequent than Sarcoma. Of 30
cases of malignant tumours of the thyroid published by Kauf-
mann, 23 were carcinomatosus, and only sarcomatous (Engel-
ken's Surgery Ed. 167 p. 373). The disease almost invariably
occurs as a primary one, but occasionally it is secondary.
but of 300 cases of carcinoma published by Förster (Zunge med. Töcke L., barnst. Tidn. Vol III, p. 192) only 2 were secondary.

Sometimes the disease results from invasion from neighbouring affected parts (Engelbrecht, Tidn. 111). Out of 23 cases in Kaufman's collection all originated in a gland already affected with chronic bronchitis; nearly all the tumours affected not only, but in a few cases the whole gland was implicated. The tumour in all cases was soft in consistence and composed of polygonal cells—of the result of proliferation of the normal gland cells—while first filled the spaces and then burrowed into the surrounding parts in columns. The tumours were characterised by rapid growth and early infiltration of neighbouring lymphatic glands and internal organs (Ciicicen, Zeitschr. de. h. T. p. 91). Bilskii (Zeitschr. h. T. de. h. T. p. 573) describes 2 cases of carcinoma of the thyroid, in one of which there had been no previous bronchitis, in both the disease had taken 2 years in developing itself, and eventually spread by invading neighbouring parts, and in one case produced secondary tumours in the lungs and liver; in both cases the gland was firmly fixed and inimmovable, and implicated both lobes.

Thus, the primary disease is found to consist in a proliferation of epithelial cells lining the follicles of the gland; when the follicles become distended with these newly formed cells their walls give way and the cells pass out to infiltrate the surroundings; as the disease advances with greater or less capricity the cells continue to proliferate and push themselves onwards until the whole or part of the gland is destroyed from their mutual pressure; the neighbouring struc-
tissues in time become implicated also, and the cells finding
this way into the lymphatics or blood vessels are carried away
to more distant parts, where they set up a similar condition.
If the disease be secondary the infecting cells—which may be called
"cancerous emboli"—are brought to the gland by means of the
blood or lymph stream; thus, in these cases, the tumour annu-
ences lie in a vessel—instead of a vessel—by the emboli being
arrested somewhere in the gland; here its cells divide prolif-
erate and in time form the tumour which passes on to
injure neighbouring structures. The cells forming the second-
ary carcinoma have nothing to do with the cells lining the vessel,
and they are different from the cells forming the primary
carcinoma.

Symptoms. In a goitre, probably already affected with
chronic goitre, a new formation begins evident, and
generally only in one lobe. The new growth increases and
spread faster than the goitre, and after awhile will finally
become hard, irregular, and knotty to the touch, and adhe-
rent to the deeper structures from extension of the disease.
In time the skin covering the tumour will become affected,
a cancerous ulcer resulting, and the neighbouring cervical
lymphatic glands become enlarged and indurated.

(South's Trans. of Thebais Surgery, Vol I, p. 654.)

The constitution suffers in proportion to the rapidity of the
amount of the disease. As a rule there is great pain, and in
many cases unusual difficulty in breathing and swallow-
ing, from pressure and impingement of the trachea and aesth-
agene, by the disease. (South's Trans. of Thebais Surgery, Vol I, p. 654.)
Sarcoma has clinically most of the features of carcinoma; thus, it is usually primary in origin, rarely secondary, and sometimes results from an invasion from surrounding affected parts; it generally occurs in a hydropic already affected with chronic pox, and it seldom implicates the whole gland (Eichsen's Surgery, 8th Vol II, p. 573). Generally the Sarcomatous growth is harder in consistence, and less painful than the Carcinomatous; it has less tendency to implicate lymphatic glands, although it is characterized by producing secondary growths in other parts (Eichsen's Surgery, 8th Vol II, p. 573).

Histologically the tumour is found to be composed of round or spindle cells, or a mixture of the two (Eichsen, 8th Vol II, p. 573). The disease commences in the fibrous tissue surrounding the vessels, by a connective tissue encapsulating on a bunch of fibrous tissue becoming enlarged and granular and developing a number of nuclei; after a time the body of the cell gives way, and a number of small cells formed by the nuclei are the result. Lack of these divisions again enlarges and softens a similar series of phenomena. Meanwhile the bundle of fibrous tissue disappears entirely, for after the connective tissue capsule is separated from it, the bundles seem to lose its vitality and undergo a process of digestion, by becoming transparent and subsequently melting away; in all probability this is due to the alkalinity of the tissues.

In the Spindle-celled variety, the same process goes on, only that instead of the small round cells remaining small and round, they elongate and become rather larger forming the Spindles. This is simply a further advance of the tendency to form fibrous tissue.
and is the intermediate stage between the embryonic round cells and the fully formed fibrous bundles.

Bilroth (Ueber die Gefaessverengerungen, p. 169-70) records two cases, both of which were of large size and had interfered with the venous circulation; one had the peculiarity of being circumscribed and the other undergoing a process of softening, so much so indeed that an incision was made into it.

A case of sarcoma of the thyroid is related by Mr. Bully (Sancet, 1884, Vol. I, p. 1077). The tumour was a hard painless growth, affecting the whole gland; as it gradually increased in size it began to produce dyspnoea and paralysis of the vocal cords; the dyspnoea became so urgent that 3 years after the commencement of the disease, tracheotomy had to be performed; this gave temporary relief, but only to be followed by death. At the post-mortem examination the whole gland was found to be affected, the tumour was ill-defined laterally, below, and behind; the aorta and blood vessels and veins of the neck were incorporated within the growth; and the trachea was compressed laterally and in front, and in places was infiltrated by the disease. Microscopically it was found to consist entirely of fibrous tissue. Thyroid were unaffected.

Mr. Bully supposes the disease to be malignant, from its infiltrating tendency. Mr. Butterly supports this theory, although histologically the growth was innocent in nature; he remarked that Rokitansky considered all fibromata to be sarcomata, placing them after the spindle-celled variety.
Eichsen (Surgery, ed 8 vol. P. 573) mentions a special variety of malignant tumours of the thyroid, in which the secondary tumours closely resemble the normal thyroid body in structure. Mr. Harrington Howard records such a case (Journ. 1852 1st vol. P. 609-10), where a small bronchocele had existed for years; this suddenly began to enlarge rapidly. So much so that dyspnoea was very shortly produced. After a time curious pulsating tumours began to develop themselves on the skull, scapula, ilium, and cervical vertebrae, and from the latter paralysis and death were brought on. At the post-mortem examination the thyroid was found to be simply "hyper trophyed"; all the pulsating tumours had the exact thyroid structure, but in the lung a typical round cell sarcoma was discovered.

Many cases of a similar nature are recorded by Monic and Neumann.

Treatment. Malignant disease of the thyroid is hardly within the range of surgical interference. If not only recognised during the very earliest stage of the primary disease, resection might be performed with success in some few cases, but in all probability the disorder will not be recognised until too late.

Bilroth (Handbook, 3rd Ed. 1st vol. p. 165) records a case of carcinoma where he excised the tumour in mistake for a localised hypertrophy of the gland with calcification; temporary relief followed but death ensued 7 months later from the trachea becoming in-
Ossous tumours have been described as occurring in the thyroid gland, but there is no reason to suppose that such tumours were really anything more than deposits of fatty matter, such as occur in fibrous and cystic bronchocles.

Two examples may be given of such tumours: 1. Mr. Parsons (Med. Times & Gazette, 1862, No. 6, p. 668) described the removal of "an ossous tumour of the thyroid gland". He found it enclosed in a thin capsule, between which and the tumour there was no vascular connection; on section, he found it to be at its centre composed of "perfectly formed acellular matter" and presenting an appearance "very similar to the choridites". This description appears to me to point out very clearly that the tumour was formed by a gradual deposition of fatty matter within the cavity of a cyst, the wall of which formed the thin capsule——

2. Mr. Wilford (Med. Times & Gazette, 1858, Vol. 1, p. 407) recorded a case of "tumour of the thyroid gland with a small bony tumour". This tumour is described as "a bony cyst, the size of a marble, containing some clear brown-looking fluid." This example also clearly shows that the tumour was not really bony, but simply a cyst lined with a deposit of a similar nature to the "ossous tumour".
just referred to, and containing in its centre the usual fluid material.
Thus, it seems to me most desirable that the terms "Caseous" and "Bony" when applied to the tumours under discussion, should be abolished, on account of their misleading nature.

Tubercle seems to have been noticed in the Thyroid gland (Holmes Syst of Surg. Ed 2, Vol 7, p. 304, and Jones & Siering, Path Anat. Ed 2, p. 661), but it must be very rare occurrence, for Prof. Basset never met with such a condition, and Prof. Louis and M. Paparoine make no mention of such an occurrence. (Sneyd's Anat and Phys. p. 1116).
Goitre or Bronchocele
("Gobbi-thine neck" or "Thick neck")

This disease consists in a non-malignant enlargement of the thyroid gland, which may be simple or may be modified by one or more of the constituents of the gland increasing out of proportion to the others; thus according to the structures of the gland which may be affected the disease is divided pathologically into the following subdivisions:

1. Simple, or universal enlargement.
2. Fibrous.
4. Fibro-cystic.
5. Vascular or aneurismatic.

It may, however, be remarked that the word "Bronchocele" has been used, especially in the olden time, to mean any tumour or swelling in the anterior part of the neck (Bell's Surgery, Ed 1, Vol. 1, p. 374), but in reality it should be restricted to denote only the disease of the thyroid now under consideration.

Causes I. Pre-disposing

1. The female sex is far more prone to this disease than the male. Out of the cases I have seen only 2 males have been recorded. This has been noted by almost all observers.

2. Obesity. The majority of patients suffering from goitre have noticed the first signs of fullness of the neck about this period of their lives, bowler hats not
Imminently so, for cases are on record where infants have been born goitrous, the condition being produced congenitally (Walter, Practice of Physic, 2d Ed. I., p. 779; United Practice of Med. Ed. 3, Vol. I., p. 793; Southey, Trans. of Galenic Surgery, Vol. I., p. 512.) In the human subject, I have seen such an instance, but on one occasion I examined a stillborn child with 2 large persistent bodies on either side of its neck. I made a dissection and found them to be the much enlarged lateral lobes of the thyroid joined by a very slender isthmus. — In a few cases, the disease commences between birth and puberty, but rarely is rare before the 8th year, and after the age of 25 years.

3. Heredity. That the disease is occasionally congenital there is no doubt, but whether it is hereditary in the true sense of the term is uncertain. Now and again cases crop up where one or both parents in some near relations have also suffered from the malady, but it has been my experience that such a history is an exception. — Except in some endemic districts. — and in these cases, as Walter remarks (Practice of Physic, 2d Ed. I., p. 779), the same conditions and causes of heredity are brought to bear on both parents and children. He likewise relates a case of a woman where a woman has a grandfather, father, paternal aunt, and cousins all subjects of the disease, and also did not all live in the same locality; or the persons in their respective neighborhoods suffering in a similar manner. I consider that goitre is truly hereditary now and again, but that such is rare occurrence. Though there does seem to be a predisposition existing in some more than others to the development of the disease.

4. Trauma. The most undoubtedly occurs in Traumatic Sub-
jects in a fair number of instances, but there is not the least evidence to show that it has any direct relation to it. But it must indirectly, to a certain extent, influence the gouty condition by lowering and weakening the general health, which has, as will subsequently be shown, a considerable causal effect.

5. "Aneurismal Diathesis" is thought by Billius (Surgery Souths Hans 1861 p.655) to be a predisposing cause in the production of "Vascular Gout", partly through a general weakening of the walls of the blood vessels.

II. Exciting Causes

1. Uterine Function. During menstrual periods a thyroid usually of normal dimensions is sometimes seen to enlarge temporarily. It will assume this normal dimensions when the menstrual flow has ceased.

Permanent enlargement of the thyroid has been known to come on or to increase rapidly during pregnancy and confinement (Norton, Act of Physic, Ed. 4, 1877, p.798) and (Arch. Gen. 1880). Records 2 such cases; a normal thyroid enlarging rapidly and greatly during pregnancy, and the enlargement apparently due to this cause. 11 cases died. He has several cases of a similar nature but in less degree. Cases have been observed where an evident increase has taken place during each menstrual period in an already existing state.

2. Exposure to cold, an intense degree of cold is stated by Blake (cf. diurnal, Ed 3, p.317) to be the cause. He says that the cold constricts the standard ducts, and locks up the fluid which ought to pass freely through them.
This theory is so absurdly wrong in every way that no more need be said about it.

3 Drinking snow water was in former days believed to be the cause of goitre (Bill's Surgery, Ed 5, Vol 1, p 318); but this has long since been shown to be untenable from the following reasons: 1. That the people of almost all the valleys of South Zealand drink snow water or water from glaciers, but goitre does not occur in some valleys. 2. That in Lapland and Greenland where snow water is commonly used, no goitre exists. 3. Goitre occurs in countries where snow is unknown as Sumatra, or where it remains sufficiently long to be at all constant, used for drinking purposes as England etc. (Atkin, Pract G Mid, Ed 3, Vol 1, p 791)

4. Parasympathetic ganglia. St. Graeke (Sancet, 1851, Vol 1, p 448-9) states that the Thyroid blood vessels act physiologically as a reservoir or storing away a certain amount of blood, which would in certain cases of disease of the vascular system. If not thus disposed of, more embarrassing organs of more vital importance - the brain. He considers that a parasympathetic ganglia affects the nerve motor filaments, which in turn cause a chronic dilatation of the blood vessels in the area in question. The Parathyroid artery which supplies a large amount of blood to the central circulation - and the inferior Thyroid artery and close together and both obtain their nerve motor supply from the inferior cranial ganglion of the sympathetic; thus a parasympathetic impression proceeding from the ganglion would be likely to affect both vessels, and suppressing its impression to be of dilating nature, both vessels would be likely to be affected by it, unless...
these circumstances a portion of the blood propelled by the heart into the now dilated vessels would be chafed off by one of them into the distensible receptacle - the thyroid - thus diminishing the blood pressure in the internal arteries and in the brain. The vessels of the thyroid, as elsewhere, cannot stand being exposed for an indefinitely long period without entailing the consequences of hypernutritive upon the tissues. The organ, consequently,ulceration takes place, first causing a soft incompressible tumour (a simple goitre) followed by hypertrophy and enlargement of the connective tissue, forming a form tumour (a fibrous goitre). - This is a change considered that ordinary goitre is only removed from ephthalmic goitre by emboiling a narrower range of ganglia affected. -

It seems almost impossible to accept this theory as one is unable to imagine that paroxysms of the sympathetic should affect large numbers of people who live in certain well defined goitrous districts and who frequently become cured or relieved by simply moving out of the infected locality. Again, why should the Inferior Central ganglion always be the subject of the paroxysms, and why should not the Internal artery, which is also dilated suppose this theory true, cause various signs of increased blood pressure in the brain even though part of the increase pressure has been thrown on the Thyroid vessels? Besides this the Internal artery arises below the Inferior Thyroid and will thus be more than likely, liable to take the greater share of the increased blood pressure. Lastly no lesion of the Sympathetic ganglia or nerve fibres has ever been discerned in cases of goitre, neither has goitre resulted from experi-
ments destroying the cortical sympathetic.

However, in some few cases, this may be a cause of enlargement of the thyroid gland, but it must certainly be a very rare and very difficult to recognize.

5. Drinking water impregnated with an excess of sulphate, carbonate, lime, or magnesian lime stone. This from years past has been the popular and generally accepted theory concerning the causation of goitre. The exact method by which such impregnated water causes the disease is unknown, but it may be that the blood becoming over charged with lime salts, or some chemical product derived from the water, as yet undiscovered, excites the thyroid gland to an increase of functional action, either by causing the lining membrane of the sacules to attempt to eliminate this material in excess, the blood and thus diluting the vesicular contents by anaesthesia, or else by the matter in excess acting on some way as an irritant and stimulating the constituents of the gland to an emaciation.

By far the largest share of collected evidence goes to prove the truth of this theory; but observations have rarely been made with regard to the locality and condition of the water, rather than with regard to the immediate causation of goitre by impregnated water. The samples brought forward in favor of this cause are almost without number, here, however, only a few will be mentioned as typical of the whole. — Goitre is endemic in parts of almost all countries of the face, and apparently most of these localities are situated at the foot of hills or mountains containing alpine limestone rocks; water percolating through the limestone strata becomes impregnated with the calcic salts before mentioned, and
in this condition may be used for drinking purposes by all except the inhabitants of the locality. The evidence obtained from many numerous examples shows that many of the inhabitants who drink this hard water are liable to gout, while those who happen to use surface or other water are exempt. Mr. McDelland made most extensive inquiries in India, and stated many examples in favour of this theory; the result of his work however may be dismissed shortly in the following words. "Mr. McDelland affirms that in the course of his personal inquiries, which extended over a large square miles, and which were prosecuted without regard to any theory, no instance occurs in which gout prevailed to any extent when the villages were not situated on, or close to lime stone rocks (Paton's Prac. of Physic, vol. i. p. 85, Ed. iv). - In Cape Thomas's discovery to the Red Sea; gout was found the prevalent at Edomontor where the soil is calcareous and contains magnesium limestone. The disorder attacked only those inhabitants who take the water from the river; the men who journey from home during the winter, drink melted snow and are less affected; after a voyage to the seacoast during the summer has cured an incipient attack. Those natives who drink nothing but spring water during the winter, and of water from springs running through the plains in summer are exempt from attacks of the disease" (Paton's Prac. of Physic, Ed. iv. p. 802). - The disease has been known to affect a family in a very short time, whereby the rest from the disease while using surface water; had a well dug and obtained water by tapping a lime stone rock; after drinking water from this well for a little while the disease appeared among them. (Paton's Prac. of Med. Ed. iv. p. 791).
in Derbyshire, Yorkshire, Nottinghamshire, Hampshire and So

the, in England, where the disease prevails, there is a ridge of

magnesian lime-stone running from North to South through

to the centre of the district. All along this line, goitre is prevalent

to its greatest extent and diverging on the sides. The disease

is found to diminish (Bills, Proc. Med. Ed., 1871, p. 92.)

Alpine lime-stone does not occur to any great extent in the

mountains of Ireland, nor in those of Scotland nor Wales; and

in those countries goitre is almost unknown (Anti. Tray. 

Bolton, 1817, p. 1355).

However, various objections can be made to this notion of

causation of goitre, or at any rate to the entire production of

the disease by this cause. 1. Various sporadic cases pre

sent themselves where water impregnated by excess of lime

salts has never been used by the sufferers. There exist an

instance now under treatment. There has made special enq

quiry into the condition of the water and has found that

during my patients whole life she has used locally, "tap water

from the reservoir at Belfield."—2. The disease is known

to occur as an endemic in districts where no limestone

stretches for many miles around; such an instance is desc

cribed by Syme (Lancet 1877, 1, p. 938); he found that

among the Bhotias of Basa (India) both young and old

were almost entirely free from swelling or less enlargement of the

thyroid. He states that these people on utmost poverty

and diet. 3. Water containing much lime salts is very

largely drunk in this country in districts where goitre is

unknown. This is very likely the condition of my native

place (in the counties of Hampshire and Bedfordshire).
which is situated on a limestone ridge and where the water is very hard and impregnates the soil with lime salt. I have never seen or heard of a case of whooping in the district.

Air, locality, and social condition are not infrequent brought forward as causes of whooping and apparently with considerable reason. It has been before remarked that whooping is endemic in many localities and that these localities are most usually in close hollows or valleys in mountainous districts, taking for examples the Alps and Pyrenees. The disease is most common in these valleys which run from north to south which are bordered and shaded by mountains and into which the sun does not readily penetrate (Siddon's Surgery, Ed 8. T. P. 56). The result of this is that the air becomes moist, stagnant, oppressive, and seldom stirred by wholesome breezes. And when these geographical and meteorological facts, domestic ones are added—which are known to prevail among the poor of these regions—such as inferior provisions and often insufficient food, filthiness, uncleanliness, and ill-ventilated houses, it is by some imagined that these combined causes have more oratory rate as much to do with the production of whooping cough than salts that dissolved in water. Take again for example the cases of whooping occurring in large towns which always occur among the poor who live in cellars and underground kitchens, or damp ill-ventilated courts and streets where are subject to low living, bad food, and general filthiness. When the disease is met with in the richer classes it is found to exist mainly amongst children.
and young people shut up in schoolrooms, or devoted to a sedentary and indoor life (Fricksens. Surgery, 781, 727, 728). The following instances may be quoted to support the cause of soitre. — In Johnson's remarks, "We find in the Valais (one of the Swiss cantons) and in the lower forges montane that open on its sides, both brutanism and Barnebrooke in the most intense degree. As we ascend the neighboring mountains brutanism disappears, and soitre only is observed. And when we get to a certain altitude both maladies vanish." Pearson states that "all the Bretons he saw were in adjoining houses in the little village called la Batia situated in a narrow corner of the valley. The houses being built up under ledges of the rock and all of them very filthy, very close, very hot, and miserable habitations. "In villages situated higher up the mountains soitre are to be seen" (Nature's Pact of Fire, ed. 17, 17, 17). M'Gray's remarks (Lancet, 1877, 17, 17, 17) may be again quoted — he says that the Pyrenees of Beaza 15th century, and 15th century, were usually affected with soitre, and that they live in the utmost poverty and squalor, but drink water unpolluted with excess of lime.

I have examined one or more locally myself, the result of which will be given hereafter. On various occasions I have had cases of sporadic soitre under treatment where no other known cause but living in damp, dark, ill-ventilated houses and poor insufficient food and clothing, could be attributed.

Various instances, of course, have been found to oppose this theory, e.g., that soitre is not due to anything in the air.
common to all mountainous districts, because the highland of Scotland and some parts of Switzerland are free from the disease. Goitre also is met with in flat districts such as Norfolk and Cambridgeshire. Humboldt has shown that goitre does not depend upon any particular configuration of the surface of the earth or any peculiar condition of the atmosphere. He says that in South America Barnebothiel is met with in the upper and lower course of the Magdalena river and in the high flat country of Bogota, while it above the bed of the stream. The 1st of these regions is a thick forest, while the 2nd and 3rd present a soil destitute of vegetation. The 1st and 3rd are exceedingly damp, the 2nd particularly dry. In the 1st the air is stagnant, but in the 2nd and 3rd the winds are impetuous; in the 1st from 20° to 23° below all the year round, while in the 3rd it ranges between 4° + 17°. In the highland, India found that goitre in one portion of the district he surveyed was extremely frequent, while in the other portion was almost unknown. The disease, although an equality of moral as well as physical circumstances appeared to affect the whole. The external alpine circumstances were the same in every part: the inhabitants belong to the same class of Hindoo, and were subject to fewer irregularities in their mode of life than any other people in the world. ( Meteor's rest of Physics, Ed. 17, Vol. x.)

7. Determination of the System by successive intermarriage, combined with hereditary tendency, is usually considered not to be a factor in the production of goitre, but from the following remarkable instance, I am inclined to believe that it may in some cases produce the disease. Some 20
years ago and for many years before - Newhall a min-
ing village 3 miles from Burton-on-Trent was a nest of
brucellosis. The disease being almost entirely confined to
the parish. More than half the population said they
suffered to a greater or less extent from "stitch in neck". For
many years the inhabitants consisted almost entirely of these fam-
ilies viz. the Staleys, the Brealey's, and the Parkers, and such
a hereditary tendency existed among them that it was considered
wrong for one family to marry into another, and almost a
crime if anyone married a "foreigner" - anyone was
called who did not belong to the parish - the result of this was
that nearly every one to married a blood relation and a consi-
derable deterioration, both bodily and mentally, was produced.
Lately however, matters have changed, and "foreigners"
have been admitted more and more freely. As they have
gradually come in, so the disease has gradually died out, and
the general condition of the population has improved. So that
nowadays there is not one case of brucellosis when there
formerly were a dozen.

From the foregoing facts I believe that the severe intermarriage,
along with a hereditary tendency, and perhaps impurity,
and the water was the cause of soiree in Newhall, and I
have strengthened such a belief by exhaustion of other causes.

1. The water supply was almost entirely derived from shallow
wells and the water itself drained off the neighbouring land
on the side of the clayey hill. One family in which there are 3
members suffering from enlargement of the thyroid were
drank anything but soft water, collected from the roof in a
bottle, from infancy until after the disease made itself appar-
ent - I am personally acquainted with this family.  

2. The situation of the village is good, being on the side of a hill: the air is fresh and pure except from some smoke from neighbouring collieries. The houses however are and still are for the most part small, ill-ventilated and dirty. The inhabitants attributed the disease apparently, to carrying heavy weights of coal on their heads; but many children developed the disease before they were able to carry anything in this way.

The objection to this theory of causation is, that in many places, such as the numerous fishing villages in Scotland, where the same severe intermarriage occurs, the countrymen but this probably is due to the absence of any hereditary tendency in the first instance.

I have now shown that the exciting cause of scurvy is still shrouded in a cloud of mystery, and that no theory has at present been brought forward which is not open to many objections. Out of the seven causes mentioned only the last 3, viz. "water impregnated with excess of lime salts", the effect of damp cold atmosphere in conjunction with poor living and "vitaminisation of the system from excessive intermarriage combined with heredity", are of any value. Having given considerable time and attention to the subject I have at length formed the opinion that either one or the other of the 3 last causes above mentioned may produce the disease and that in certain instances they act in conjunction with one another. The evidence brought forward in favour of the water theory is far too strong to be laid aside, while
on the other hand, it is undeniable that soitite occurs in many instances where lime salts do not exist in the drinking water.

In many instances again, especially in mountainous districts - the first of its acceptability is founded upon facts obtained from exact examination of the locality, and it is in these localities that the disease occurs in its most intense degree. What can be more likely than that a person whose health is destroyed by general exposure to an unhealthy locality - which is itself a cause - should be much more easily affected by the lime salts as a second cause.

The fact that drinking water impregnated with lime salts does not always produce soitite, seems to prove that the lime salts may not be the cause of the disease in themselves, but that they must either be accompanied by some product at present unknown in those instances when soitite is the result, or else that the disease depends upon the amount of the salts present, or the manner of their admixture.

Pathology. Simple enlargement - generally known as hypertrophy - consists in its earlier stages in an overdistention of the vessels caused by the accumulation of their secretion, accompanied by some increase in the amount of the intervascular fibrous tissue and a slight dilatation of the blood vessels. There is no evidence whatever to prove that there is a true hypertrophy of the glands - i.e. formation of new glandular tissue; this being so, the word 'hypertrophy' should not
Feared to define this condition, the term 'simple enlargement' being more correct, will be employed here in its place.

Upon naked-eye examination the tumour may be found to affect the whole gland, but more frequently the isthmus, or one lateral lobe (the right commonly) is found to be the part most affected. Its surface is smooth and rounded and to the touch it is soft and elastic; on cutting into it, it has much the appearance of a normal thyroid, but often the vessels can be seen by the naked eye to be dilated, and to contain aropy, viscous, colourless fluid. Microscopically the same condition is found with some slight increase in the quantity of the fibrous tissue and the size of the blood vessels. There can be no doubt however that in the very earliest stages of the disease the fibrous tissue and the blood vessels are normal. The enlargement being then solely due to the non-dilated vessels. As the disease advances various changes may take place, viz. 1. There may be an equal increase in the various constituents of the tumour—when it is called 'simple enlargement'. 2. The vessels may become still more dilated with the secretion—called 'cystic goitre'. 3. The fibrous tissue of the gland may become greatly increased when it is called 'fibrous goitre'. 4. Along with general enlargement of the vessels may become greatly dilated and tortuous, when it is called 'vascular', 'enlarged', 'pulsating goitre'. It should however be noticed that blood vessels are to a greater or lesser extent dilated in all kinds of goitre, and also that lymph, from dilated vessels, may form in bronchocoeles where the fibrous tissue is the predominant feature.

1. Simple goitre. The tumour—which may affect the whole or any part of the gland, or one part to a greater degree than another—still re-
mains rounded and smooth in appearance, and soft and elastic to the touch. On section, the vessels and blood vessels are found increased in size, and the fibrous tissue in quantity, such as equals proportion to the amount of general enlargement. As a rule the variety of pituita does not grow to any very great size, and seldom causes distortion of surrounding structures.

1. Pituita Cystic. In this form of the disease the size of the tumour varies greatly, as may be quite small or large enough to hang down on the chest. The surface of the tumour may be rounded and smooth, but sometimes it is nodulated (Encyclop. Anat. Phys., p. 110). A varying amount of fluctuation is to be made out, depending upon the thickness of the cystic wall, and the density of the fluid contents. The bile or part of the gland may be affected, but the thyroid is the most common seat (Langet 1873, p. 605). In section cystic cavities are visible, varying greatly in size, some being smaller than a pin's head, while occasionally one large cyst comprises the whole tumour. The contents of the cysts are also very various; most frequently a firm, opaque, gelatinous, blood material is found, not unfrequently deposits of calcareous matter, calculi, bile, and typical phosphates, arranged in irregular masses, or lining the walls, often entirely filling the cavity: some cysts contain nothing but fluid liquid, others, more or less, blood. Some authors consider this variety (Encyclop. Anat. Phys., p. 110). The larger cysts are often distended with a dark brown yellowish fluid mixed with drops of blood, and at other times with a clear watery fluid (Sponia's Surgery, 62, 1873). The cysts in large masses are sometimes distributed through the gland, and occasionally, growths of gland substance are found projecting into the cavity of a cyst. Some writers consider
There is a new adenoid formation, but it is more probable that these are remains of normal gland tissue encapsulated in the cyst. The cysts are formed by the vesicles becoming greatly distended by the hypersecretion; as the vesicles enlarge their walls are apt to give way, so that a large cavity results, ranging in size according to the number of ruptured vesicles that enter into its formation. These vesicles often form true extravasations of blood, which mix with the previous vesicular contents, and still more increase the size of the cyst. Beck and Lillie say that cysts may originate from simple extravasations of blood and its subsequent changes. Fisher considers that very commonly cysts result from ligation and breaking down of a previous colloid cyst. Kanuit, 1892, Vol. I, p. 603; Bland-Sutton (Blindness, New York, 1879, p. 107) says that cysts are sometimes formed by mucoid degeneration of the parenchymatous gland tissue. Legare & Ireland causing dyspnea or dysphagia, but occasionally, when situated upon the side of the neck, it will distort the trachea and cause the patient a sensations of breathing.

3. Fibrous Diverticulum. Also varies greatly in size: it may affect the whole gland or any part of it, but rarely the Thymus alone. Langet, 1872, Vol. I, p. 607). The surface of the tumor may be smooth (Langet, 1872, Vol. I, p. 607) but partially in the majority of cases it is irregular and lobulated (Richardson, Journ. ped. Vol. I, p. 68). It is usually hard, dense, and indurated; on section hard, by any vesicles are to be seen, and the chief part seems to be chiefly composed of a fibrous tissue; in microscopic examination this is verified, the intercellular fibrous tissue being found to be much increased & produced a dimens-
SECTION IN THE VESICAL STRUCTURE (Bennet, 1892, Vol. II, p. 679) probably from the pressure which it bears. The dilatated condition of the surface is caused by cicatrization contraction of the new fibrous tissue, as is likewise the case —. It may be again noted that cysts are not uncommonly met with in parts of a fibro-sclerotic bladder — when the name "fibro-sclerotic cysts is used." Fibrous cysts are more apt to produce serious pressure effects than any of the other kinds in account of its dense and yielding nature (Brock's Surgery, Eds. 1st Ed. p. 568) in some cases the lateral lobes grasp and constrict the bladder.

1. Vesical cysts may affect the whole or part of the wall. (Brock's Surgery, Eds. 1st Ed. p. 569). Dr. Hare (Conrad, Injuries Path. Anat. Ed. 2, p. 661) describes this condition as follows: "all the blood vessels are amplified, the veins in particular, forming an amply dilated and capacious network, the substance of the wall having almost entirely its granular character, and becomes flabby and of a reddish color. After death the tumour collapses considerably, the walls of the blood vessels being found to be attenuated and to contain blood-clot." The glandular vessels are destroyed and some traces of the epithelium are the discolored. This destruction is caused by the blood vessels losing their tonicity becoming much dilated and producing pressure on the normal gland tissue (Wiggin's Anat. Ed. II, p. 1117) leaving nothing but themselves and some connecting fibrous tissue (Smith, Trans. Of the Soc. Ed. II, p. 633). This form of cysts is sometimes accompanied by cysts (Brock's Surgery, Eds. 1st Ed. p. 569) and it may or may not produce pressure symptoms.
The Symptoms of the various pathological varieties are much alike. Except in the local manifestations that it will be convenient to consider them all together. As before mentioned, when in situ endemic or sporadic in occurrence, in both the symptoms are much the same. Nodularly, the first thing usually noticed is a swelling in the anterior part of the neck, which will generally—especially when of small or moderate size—ascend and descend with the movements of the trachea and larynx. It may be of almost any size, ranging between, either the size, being described as a graceful fullness of the neck, and a tumour which may hang downwards to the abdomen, and in an ease mentioned by Albert* to the high (Manton: official of Physic, 1744, F. St. 797). Occasionally it rises as high as the ears (Manton, p. 797) and sometimes it extends downwards behind the sternum. The consistency of the tumours varies according to its structure. Thus it may be soft, elastic, hard, stony, or fluctuating; or hard in one place and fluctuating in another; its surface may be smooth and round, puny and nodular. The growth may involve the thyroid, or one part more than another; usually it commences in the right lateral lobe, from some unexplained reason, and either passes on to affect the rest of the gland, or remains stationary in its primary position. As a rule, growth goes on but slowly, and may continue for years.
to grow, or until death occurs, without any inconvenience resulting from its size, etc. Now and again, swelling develops with considerable rapidity, and occasionally a pain which for years has been stationary suddenly increases in magnitude from an apparent cause (Watson’s Practice of Physic, 2d, Vol. II, p. 79). The tumour itself is a painless disease, and in most instances from ganglionic tumours or inconvenience is caused solely by the weight of the growth, and the deformity it produces; occasionally a dull aching pain is complained of, probably produced by the dragging of the tumour or neighbouring structures. Recurrent, however, great distress and suffering, and sometimes death are produced from the mechanical pressure of the tumour on contiguous parts. Thus may be accounted for the descent of the blood through the veins of the neck, causing them to dilate and producing leaden, piddling, rushing sounds in the ears, and a tenderness of the blood vessels of the face and head (Watson’s Practice of Physic, 2d, Vol. II, p. 79). Swelling and spasm of the latter may result from pressure on the recurrent laryngeal nerves (Holmes’ Smaller Surgery, 6th, p. 382). Dyspnoea and sometimes death from suffocation result from pressure on the trachea, and more rarely dystagmus from pressure on the thorax. It should be particularly noticed that this kind of tumour has not necessarily anything to do with the production of these present symptoms: large ones may frequently give rise to no inconvenience to speak of, while in the head and a small tumour may give rise to the greatest distress, such as a small tumour situated upon the isthmus is very apt to cause. Injuries press upon the trachea (Watson’s Practice of Physic, 2d, Vol. II, p. 79). I have attended a
case there considerable dyspnoea and dysphagia were produced by a small obstructive nodule which abraded both trachea and larynx by the enlargement of both lateral lobes posteriorly.

In very many cases especially those of parathyroid origin the general health becomes affected, the sufferers complain of debility, loss of appetite, often anaemia exists; and I have found that functional murmurs heard at the base and apex of the heart, and over the vessels at the root of the neck, are far more common than not. Infrequently the menstrual function is very commonly subject to irregularities; I have noticed that sometimes the appearance of the flow is delayed until long after the usual period of puberty; sometimes there are many months between the periods, and sometimes only a few days. Sometimes the discharge is scanty, sometimes profuse, and sometimes accompanies great pain.

Proctorhagia is sometimes associated with mental deficiency, the sufferers being usually dull and stupid from their infancy, but without any bodily deformity. I have seen 2 such instances: or it may be associated with partialism in some endemic localities; but this will condition will be discussed more fully later on.

The symptoms of a vascular goitre have not been mentioned at present, as this condition is a rare one, and its manifestations differ widely from those of other varieties. This kind of goitre is characterised by its sudden origin and quick growth: the tumour is warm, firm and tense. To the touch it transmits a strong pulsating sensation.
Surgery Ed2 p.87) which is acetous, distonic, and synchronous with the heart's action. Thus showing that the pulsation is due to the vascular character of the growth (Eichsen Surg Ed8 Vol1 p.569). When the disease affects one or two of the lateral lobes it may be mistaken for a cystic aneurism (Science 87 Eichsen 569). Occasionally it occurs in conjunction with the pectoral variety of force (Eichsen 569).

Acute enlargement of the thyroid is an occasional occurrence; it may arise sporadically or epidemically. The gland enlarges with great rapidity, and attains the size of the fist after a course of a few days or weeks. Usually the whole gland is affected. Seeing the rapid enlargement of the gland, the feeling of the neck coming it does not stretch with sufficient rapidity, the consequence being that the tumour is liable to press upon the trachea producing distressing, and sometimes fatal, oppression (Eichsen's Surg Ed8 Vol1 p.572). Atkin (Pract Med 53, Vol1 p.792) refers to an instance of this disease occurring epidemically in the garrison at Brionçon (Aulère Alp), nty 1852 men 53 were admitted to hospital during 15 months suffering from acute goitre; no cause for this could be assigned. Another instance of similar nature occurred at St Etienne (Jancet 1873 Med, 1722); 360 soldiers were affected with the disease, and curiously none were benefited by treatment; in this case too, no cause could be discovered. A sporadic case terminating fatally is referred to by Bryant (Surgery Ed3 Vol1 p.194); it occurred in a young man who had suffered for 8 months previously from paroxysmal attacks of asthmaic oppression, associated with some general en-
largement at the base of his neck. The attacks became steadily worse and 3 days later a severe paroxysm was terminated by a very speedy death from asphyxia. At a post-mortem examination the trachea was found to be flattened and displaced to the left side, by being surrounded by a greatly enlarged lateral lobes of the thyroid.

The terminations of goitre are various: in some cases a cure takes place naturally, in others after medical or surgical interference; in many the tumour exists in a harmless condition until death results from some other cause. Death from goitre may be caused by asphyxia or stenosis brought about by the pressure exerted by the growth upon trachea or oesophagus, preventing air passing into the lungs, and food into the stomach. (Patton, Part 1, Topic 34, p. 798). In rare instances the disease may run on to a "sinuscula-like" ulceration (Atkins in Pract. Med., Ed. 3, Vol. 4, p. 390) or to inflammation and suppuration, which may terminate the disease by a natural cure.

The treatment of goitre varies very much with the size and character of the growth, and the state of the general health. Thus in its earlier stages it is the duty of the physician to prescribe, but in the later stages the surgeon alone will be able to cope with the disease.

In the slight simple enlargement, especially in speradic cases and those associated with anaemia, all that is generally required is attention to the general constitution; thus the first thing to be done is to change the sufferer's residence, which is
probably a most insidious one — to a higher, drier, and more
sensitive situation; next, the food must be carefully attended to; at first
the stomach is often considerably deranged, so the diet must con-
sist principally of milk, milk puddings etc.; as digestion improves
the amount and variety of the food is to be gradually changed un-
til a full ordinary diet can be taken with safety and without
discomfort. Medically, iron — quin - which he iodide has
proved to be the most useful preparation in my hands; —
and cod liver oil will almost all simple cases bring about
a cure, but occasionally, quinine and arsenic astocytes
are beneficial. Dr. Seitz (D-lit. 57, 1, 957) remarks that he has
found that it not only increases iron, but produces it in
cases where there is an hereditary or actual tendency to the con-
plaint; all I can say is that it has never been my experience
nor can I find any such record of such a result.

Then true means fail counterirritation must be applied
on the tumour, for this mixture of iodine waters in acidic
sparingly once daily proves of the greatest value both by coun-
terirritation and partly absorption. Liquor speciositas ap-
plied 24 a week on a side of the neck alternately is much
recommended by Dr. Russell. Mackenzie (D-lit. 67, 11, 25, p. 25).
Iodide of lead ointment is counted greatly by some authors. Mac-
kenzie found that the size of the tumour increased slightly under its application. Capt. Cunningham and Major Holmes
used the bismuth of mercury ointment with great success
in some thousands of cases in India; this method of applica-
tion as follows — an ointment was made by mixing
8 grains of bismutum of mercury with 16 of iodate; this was
well rubbed into the skin on the tumour with a spatula an
from after symmetry, the patient then lying in the sun as long as he could bear it, with his feet held up so as to catch the rays of the sun; about 12 noon a blister formed but no pulsation. At 2 P.M. the ointment was again applied, the ointment gently with the finger, and allowed gradually to soak in, a process which took about 3 days. - A cure generally resulted from one application, if not the patient came again next year; now and again a complete failure resulted, but very seldom (Lancet, 1874, i. 116). This method of treatment has failed in this country, possibly from want of the heat in the sun's rays (Bryants Surg. Ed. 3, 117 p. 192). Present in some instances is useful, but no great amount can be tolerated on account of the interference with respiration which it will produce.

(Stichams Surg. Ed. 2, i. 257)

H. H. disease still continues obstinate; the internal administration of iodine should be repeated, but not however until the anaemic condition is lessened, and the gastric symptoms cured. In olden times the favourite remedy for broncho-

The best method of combining the drug is by combining the mixture of iodine in 3 min. doses with 5 to 10 gr. doses of nitrate of potassium. Syrup of the nitrate of iron may be added with benefit sometimes in anaemic conditions.
Sometimes unfortunately, iodine results, but it should be remembered that very often by largely increasing the dose of iodine these unpleasant symptoms will abate.

Dr. Wykes (Lancet, 1881, p. 172, pp. 447, 737) speaks of para-normally of hydrochloric acid as a substitute for iodine, given in 15 to 30 minutes does gradually increased if necessary to 2 drops of a 2 per cent solution of the previous 1/2 of the dose of iodine, given in this manner, precaution. He thinks that soon when the drug is insufficient in itself to cure the disease, it may assist surgical treatment by "injection" by diminishing the number of injections among the remedies which have been recommended successful in this disease are bromide of potassium, carbonate of soda, liquor potassa, iodide of ammonium, phosphoric acid, all of which seem to have been used with good results in occasional cases.

In endemic cases, the sufferers should at once be removed from the infected locality, to a healthy one, where the water, air, and hygiene are above suspicion, and until this is done, the administration of drugs is all but useless. Medical treatment must be continued at intervals in the manner already described; when the enlargement is simple a recovery generally results, but when the disease is "phlegmonous" infection the course may be anticipated.

In concluding his remarks upon Medical treatment Dr. Wykes it may be mentioned that in 1867 an attempt was made in Upsansky to stamp out "ebite," and notwithstanding con-
Siderable opposition on the part of the adult population was
benefit they have been the result. The method adopted
was to supply suitable drinking water, to drain swamp
fields, and to fell trees to ensure a better circulation of
air and light. The schools also closely watched sanitary
regulations strictly enforced in them, and pastilles
containing iodine were given daily to the scholars. Only
5,000 children were treated suffering from yaws, 2,000 were
cured, 2,000 relieved, and the remaining 1,000 were

**Surgical Treatment** It cannot be too strongly urged that it is not
justifiable to endanger a patient's life by any surgical interfer-
ence, so long as the tumour does not impede respiration, disten-
tion or the circulation, or greatly inconvenience the sufferer by its weight.
Sometimes however, although none of these discomforts exist, a patient
begs the surgeon to operate, simply to remove the disfigurement
caused by the disease, for which medical treatment has been
found to be of no avail: it then rests with the surgeon whether
not he will perform one of the simpler operations, having first
made the patient fully aware of the risks which may be run.

The various kinds of surgical operations may be enumerated
as follows: Simple puncture of the orbit; trephines; Setons; Application
of caustics; Biopsy; Tumours of Stomach removed; Sig-
nosis of the Superior Hypophysis arteries; Division of the Stomach, and
Partial or complete section of the Hypophysis.

1. Simple puncture of the orbit can be made with the trepan,
form a, or the aspirator. As in orbits elsewhere, this is not in itself
a palliative operation, but it is sometimes useful for diagnos-
the purpose. If the operation be not carefully performed danger inflammation may follow, such as described by Bichot in 2 of his cases (Blin Surg. New Syd Soc, p. 158). Sometimes the see had been laid freely open by an incision (Bichot, clin. Surg. pp 158-9) and a drainage tube inserted, or the cut edge of the cut wall united by sutures to the skin (Bichot clin. Surg. p. 158). Such procedures too seem are liable to be followed by haemorrhage and septicaemia (Bichot, clin. Surg. p. 158) so that the operation unless performed with the greatest care is hardly justifiable and certain it is not so successful as the following.

2. Injectioins

Injctoins of Tincture of solution of iodine. Solution of Perchloride of iron, Alcohol, and Iodidin. Such Procedure may be practised for cystic or solid tumours but it is in the former that most benefit results. The inject of iodine and Perchloride of iron is to set up inflammation and often suppuration so as to convert the part into an abscess.

Iodine is recommended by Bichot—in 26 cases of cyst of the Thyroid he injected and left in 32 grains of pure iodine in each case. 2 of 3 subsequent operations were succeeds, but in all cases of Simple cyst a cure resulted. Occasionally Iodine was produced (Blin Surg. New Syd Soc pp 159-60). In simple hepatic heparies he also found it useful, but in fibrous homocleles he does not advise it, owing to the tumour being permeated with large blood vessels (Bichot, clin. Surg. p. 159). Mr. O'Leary however reports favourably upon the result of injection of Iodine into hard fibrous goitres, one or more punctures being made at a sitting according to the size of the tumour (Junct. Med. I, 1869, p. 10). Bichot (Surg. New Syd Soc, p. 158) recommends the injection of Tincture of iodine, portions being injected at a time by means.
An ordinary hypodermic syringe. Perchloride of iron has been shown by Dr. MacKenzie to be of great service when injected into a cystic bone-cellula. For this method of using the drug as recommended by him is as follows: The cyst is first emptied by means of a large and cannula, the puncture being made as near the middle of the neck, and as low down as possible; as soon as the tear is felt to have pierced the cyst wall, it is withdrawn and the cannula is passed further in by means of a blunt-pointed key. The cyst fluid having been withdrawn through the cannula, a solution of Perchloride of iron (37% of the salt to 37% of water) is injected by a syringe through the cannula: the plug is then reinset, and the cannula held in place by a strip of plaster. The injection is to be repeated every 2 or 3 days until suppuration is fully established. When this point is reached, the cannula is removed, and the case treated as a chronic abscess by poultices, incision, and drainage. When the tumour consists of more than one cyst, it may be necessary to make a 2nd or 3rd puncture, but it frequently happens that a cyst can be opened through a cyst previously punctured. Dr. MacKenzie treated 38 cases in this manner, all of whom recovered perfectly. Mr. Holmes (Surg. lond. ed. 3, p. 559) speaks very favorably of this method. Liquid which chloride and hog's fat have been injected into pectoral swelling to reduce its size, preferably from the lesional properties and their power of causing contraction in vascular tissues. Mr. Holmes has never found any decisive benefit arise from such treatment. Dr. colleagues (lancet 1877 N.II P. 53) injected a vascular in the lesions with a solution of hog's fat, in doses of 1/2 grain increased to 1/2 grains, with considerably relief.

Absulute alcohol is recommended by Dr. Stevenson for soft parenchymatous and cystic growths to produce hardening of the tumour by coagulating its cellular contents. He injects 1 drachm of alcohol by means of a Paraguayan syringe, repeated at intervals of several days in different parts of the tumour. (Bryants Surgery 1893)

The late Prof. Spencer recommends, in a different method of applying irritating fluids, in certain instances. Very large cysts, said, required opening and counter-opening to completely evacuate their contents. This having been done, the interior of the cyst is to be painted on with tincture of iodine. Blood cysts containing clot should be firmly induced so that the clot may be turned out, and the interior painted as before with tincture of iodine, or tincture of mercury, or in some cases of haemorrhage the cavity may be stuffed with lint dipped in a weak solution of perchloride of iron. (Spencer's Surgery, ed. 2, 1815, p. 820)

3 Strokes have been used for many years past in both cystic and fibrous growths, and apparently with considerable success, although the operation is not unattended with risks from Septicaemia (Smith's Elements of Surgery, 1879, p. 623); Buchen. Burs and the (1867) pointed out the earlier to terminate the disease in those cases terminating fatally where air had entered into a run at the root of neck, which had been accidentally punctured during the operation. Dr. Morrell, Mackenzie (Lancet, 1875, p. 126) recommends 2 strokes as the test method of treatment for fibrous tumours: out of 81 cases treated with it, 42 were cured, 17 healed, 5 diminished, and 13 disappeared before any result could be ascertained; in not one instance was there a symptom of blood-poisoning. He passed 81 threads of wire, according to the size of the growth, transversely through the tumours. Mr. Holmes
Smallin (Surg. Jd., p. 579) says that a seton is sometimes very useful in acute abscess, but that it is not without its dangers. Dr. Bur- 
ning (Lancet, 1867, p. 729) states that in his opinion setons are preferable to injections as they allow the fluid formed to 
scape, and thus prevent rapid enlargement of the abscess from the retained fluid, producing asphyxia from the rupture of the abscess into the trachea: (a case of which is 
referred to in St. Bartholomew's Hospital museum).

4. Caustic applications have on various occasions been used with indifferent success. Billich (Klin. Zeit., 1874, p. 360) records 
a case of parapharyngeal abscess associated with smaller cysts where he incised the skin on the right side over the large tumour bag, and 
applied strips of lint dipped in bichloride of lime paste. In the following day the caustic part was scraped away and the paste reapplied 
Oupperna later gradually increased until the patient died of 
asphyxia. F. McDoull MacKenzie (Lancet, 1872, p. 57) describes 
Omaisonneuns caustic darts (composed of part bichloride of lime 
to 1 2 parts of wheat flour) in cases of fibrous lone locule ulcer. 
Ocaused part is so deeply situated that it is impossible to pass a 
Seton through it.

5. Electrolysis has been claimed by Julius Altman as a safe, successful 
and comparatively painless method of treatment. He describes the method of procedure as follows (Draughtsman's Retr., 1876, p. 1, p. 2). A bichloride dart, 
inserted in 3 needles singly into the cyst, and connected with the 

In the present instance, an insulated conductor wire attached 
the negative pole of the battery, while 
the positive electrode, connected with the moistened sponge, is placed
not skin in two neighborhood; from 2 to 5 applications seem to be usually sufficient to produce a cure. I find, nostrums are more difficult to deal with on account of the slowness of recovery and the consequent large number of applications. Mr. Adams found that time was gained by combining an injection of the substance, elimination of iodine into the substance of the tumour, with the electrolytic applications; iodine apparently breaking up the internal structure of the tumour and thus aiding electrolysis by allowing a free passage of the current through the mass. This combined method is always called for in old tumours of some years standing, but electrolys alone is sufficient to remove recent growths. Dr. Baldachk [1854] Time, Aug. 87, [1854] has made similar observations, but he found it necessary to increase the number of needles inserted into the tumour, and the number of cells of the battery, and the period of application from time to time. He believed that by using a still more powerful battery injection of iodine might be dispensed with.

The immediate result of the operation is enlargement of the tumour but after 5 hours the swelling gradually subsides to a size below the original dimensions. Electricity produces a decomposition in organic substances—hydrogen going on at the positive pole with the formation of a metallic salt, while at the negative pole nascent hydrogen is formed and a fee alkali produced; thus only the negative pole is to be introduced into the heretofore healthy place, for it is harmless and because the positive pole would produce inflammation and suppuration:—Therefore when electricity is performed in the manner described, hydrogen is produced at the negative pole within the tumour, and forcing its way between the structures of the part passes the primary swelling; besides the hydrogen caustic soda is formed which affects the tissues by its cauterizng action, thus acts-
walls are plated with exuding purulent liquid, and gradual destruction takes place in the tissues of solid tumours.

This method of treatment has now gained universal popularity and Blake's case has died out almost entirely. I cannot help thinking that it might prove very beneficial in vascular spite or account of the favourable results obtained by Dr. John Duncan of Edinburgh, with electrolysis in cases of arboir aneurysms, which closely resemble in pathological anatomy.

6. Division of the Sternoclidomastoid muscles sometimes becomes necessary on account of the pressure exercised by them on the submaxillary gland. Two causing constriction of the trachea and difficulty of breathing. The division should be made subcutaneously. Blake (Blindness of Sydney (trans. p. 25)), in 1839, 1840. Such cases reseating in marked improvement, the atrocity in death from partial poisoning. In some cases it may be found needful to divide the Stenohyoideus, Sterno-Pharyngeal, and Sterno-hyoid muscles, all of which lie anteriorly in close relation to the thyroid gland. Blake in one of his cases just referred to divided the Sterno-hyoideus as well as the Sterno-mastoid.

Treatment of Thyroid Goitre. This operation has been performed in various occasions both at home and abroad, and has been attended with varied success. Its object is to “harvest” the disease, the difficulties and dangers of the operation, the uncertainty of the result, and the readiness with which the arterial supply is forwarded to the tumor from these sources has caused the method to be but little attended to by surgeons of the present day (Brice's Surg. Ed. 3, Vol. 1, p. 570, and Bogan's Surg. Ed. 3, Vol. 1, p. 106). The operation may, however, be justified in some cases especially those of vascular tumours. The superior thyroid arteries, situated at the innominate, are invariably to be the source.
Solvent in this instance to receive the ligature, not far from the great depth of the inner arteries, and the intimate relations of the carotid vessels and sympathetic nerves.

The superior thyroid artery is most readily tied in the triangular space bounded by the sternomastoid, posterior belly of the digastric, and the hyoid, where it is simply covered by integument, fascia, and platysma. The method of performing the operation is as follows: - First, if possible, to point where the artery is felt pulsating, then divide the skin by an incision beginning a little below and a little to the outer side of the angle of the lower jaw, and carried downwards and inwards along the inner margin of the sternomastoid; next the fascia and platysma are to be divided in the same line, and any bleeding vessels secured; the finger is now to be passed into the wound, in order to find the exact position of the artery by its pulsation; this being found, the artery must be carefully isolated and a ligature passed beneath it in an aneurism needle, care being taken not to include the thyroid veins or a branch of the internal jugular vein which sometimes lie close to the artery; should the subhyoid interfere with isolating the vessel, it may advantageously be divided (South's 'Hand of Chirurg.,' 1833, p. 607). How frequently temporary benefit is derived from this operation, but unfortunately the false anatomy of the vessels in the thyroid bed cause vascular dilatation to take place against the swelling, return to its former dimensions. Such cases are recorded by Coates and Michael (Matern's Pract. of Surgery, 164, 1851, p. 82). Successful results are however recorded by Matern (Pract. of Surgery, 164, 1851, p. 82), by D. Bowie (Surg., 188, 1851, p. 458) and by various others. E. Tuckart (Surg., 1851, p. 80) mentions a case of pulsation felt under his own care, in which no benefit was derived from the operation.
Second again when ligature of the Superior Hypo-oid arteries has failed, the inferior ones have been tied, but I cannot find any record of such a case. Helius (Surg. Trans. 1787, p. 569) says that "only if the inferior hypogastric can be perfectly distinguished by the pulsation and size at the lower part of the hypogastric, may it be decided to tie them, and the direction of the cut must then be decided by the situation of the vessels." This operation is fraught with so much danger and difficulty, that I do not suppose it would be at the present time, be found to attempt it.

8. Division or Removal of the Isthmus. Has been recommended by Billing as a means cured in many cases of stricture, the operation being intended to lead to atrophy of the enlarged lateral lobes. Now this takes place is obscure, but nevertheless its results obtained have been very satisfactory (Vickery's Surg. Edn., 1847, p. 179.)

The operation may also be performed simply to relieve distressing dyspnoea in certain cases where an enlarged isthmus itself causes pressure upon the trachea, and the lateral lobes situated in front by the isthmus, enlarge posteriorly so as to encroach the trachea, while the isthmus draws the lateral lobes tightly together; the object of the operation being to allow the lateral lobes to separate as far as possible from one another, and in this way to relieve the pressure upon the trachea and esophagus.

Complete removal of the isthmus is to be preferred to simple division on account of the likelihood of firm adhesions forming between the trachea and the isthmus - a condition which might produce a recurrence of dyspnoea. The method of performing the operation as recommended by Mr. Sydney Jones (Lancet, 1863, Vol. 2, p. 307) is as follows: - The skin is divided by an incision 3/4 inch in length, made into the middle line of the neck, reaching down to the upper margin of the
Thum, any veins crossing transversely, should be divided between 2 ligatures; the structures in front of the isthmus must next be care-fully cut through, and the isthmus detached by means of the finger and a director, from the front of the trachea; then lifting up the isthmus with the finger an incision is made, carrying a double ligature is made to perforate at the junction of the lateral lobe with said end of the isthmus; the double ligature on either side are now to be firmly tied, as with an ovarian pedicle, and the isthmus is away internal to the ligatures; the ligatures are left hanging out of the wound and a drainage tube inserted. — In 2 cases in 12 cases the isthmus is removed by a similar operation, a part of the lateral lobe along with the isthmus, the antecedent mass being included in the double ligatures prior to its removal (Janet, 1882, p. 112, p. 366-6). In a case of this kind (Janet, 1875, p. 147, p. 24) relates 2 cases in which he removed the isthmus. The method of operating was essentially the same as M. Jones', except that he found the isthmus by a single ligature only, on either side, and in the 2nd case leaving lest the ligature should slip, he left them to hang out without dividing the isthmus. — In 2 more cases (Janet, 1883, p. 10, p. 90-1 and 1874, p. 366) not only were the distressing symptoms immediately relieved, but also the enlargement of the lateral lobe diminished greatly; in the 1st case in less than 2 months the tumor could not be felt. In all cases immediate relief of urgent symptoms took place, and in time a diminution in size of the enlarged lateral lobes was apparent.

This operation is comparatively new, and performed but rela-tively in this country, is very strongly to be recommended in cases when there are urgent, pressure, symptoms, in account of its comparative simplicity, and safety, and the good results, both immediate
and future which follow. It is to be far preferred to excising the
thyroid, on account of its being much easier and safer of perfor-
mance, and because it is possible that absence of the entire thy-
roid will give rise to a distressing train of symptoms identical
with that of myxoedema.

5. Excision of the thyroid gland: (1) Complete, (2) Partial.

Complete excision appears to be so simple and danger to the patient is
an operation which only justifiable in most exceptional cases, it has
however been performed successfully in a large number of instances
most notably by Dr. Thomas of Bonn who records 3 cases without fat-

ishen, (1818) and by Melan of Edinbrough 6 cases with one death
(Boutonnet, Sep 28 1875) and Ribot 36 cases with 13 deaths (Ann Surg
May 1876 p. 178).

The only cases in which entire extirpation are
justified, are those whose death is jeopardised by the growth causing
pressure upon the trachea. Hypophagia or irregularities of
swallowing, dysphagia existing being to excise that there is no escape from
death except by excision of the tumour; it is now warranteable for
more deformity and discomfort.

With regard to the operator's pro-
cedure in removal of the entire thyroid, various methods have been
employed:—in Green exposed the tumour by a linear incision of
ample length taking great care in doing so not to wound the laryn-
gus capsule, the capsule was not divided, and excision of
the tumour performed as rapidly as possible with the finger and the
handle of the knife, till the base was reached, no attention being payed
to a smooth lower cut it might be, the pedicle was then tied
off with a blunt curved needle carrying a double ligature, and
the pedicle ligatured in halves, unless possible in as many parts
as two were arterial trunks; the gland was Lastly cut away, and
the wound dressed as in ordinary cases (Bryant's Surg Ed 3 Vol 10 p. 196)
Morton's method is less painful, the most safe and certain, and such satisfactory in result, it is performed as follows:—a free lateral incision extending from the larynx to the upper margin of the sternum is made in the medial line of the neck, and all the muscles, material and venous, ligatured; the fascia must be divided as fully as the skin, but the delicate fascial covering of the gland, which is a prolongation of the sheath of the hypoglossal vessels, must be left intact. The vessels at the corners of the wound, by the superior and inferior hypoglossal vessels, must be severed, and then securely ligatured within their sheath. By means of an aneurism needle, a thread is passed beneath them, and tying them "en masse," it is of the greatest importance that the vessels should be ligatured within their sheath, for if this be not done, they will be found so fragile as to risk being cut through by the ligatures: after the ligatures have been applied, the cellular capsule of the gland is scratched through in the middle line, and the attachments which still retain the stone in position are carefully divided and with great delicacy divided by means of curved blunt-pointed scissors. Should any hemorrhage last occur, the bleeding vessels must be secured within their fascial sheath. (Spence's Surgery, 32, p. 745). In some cases where the gland is large and affecting both lobes, it is found convenient after securing the vessels at the corners to detach each lobe separately, having previously ligatured and divided the thymus (Spence, loc. cit, 377, p. 684), while Spence (Spence's Surgery, 33, p. 800) thinks it necessary in case of large bronchial glands, to remove the base of the growth by an operator, or some kind of clamp, while the mass is removed.

The great danger of the operation is absence and sometimes total haemorrhage, but besides this, dangerous adhesions may exist, more especially so when the sheath of the great vessels of the neck is involved by
The tumour, in one case recorded by Dr. Green, was internal and irregular. In another case, the mucous membrane was wounded from this cause (Dr. Alexander, 1817, p. 871). Great care must be taken not to wound the trachea or larynx, as this may inter and suffocate the patient. Spence's case, 1817, p. 83.

Lastly, it may again be pointed out that when recovery from the operation does take place, the patient runs a great risk of dying at the remainder of his life enduring the torture of a mucous emphysematous condition; thus from this fact alone, intubation should never be considered as long as there is the slightest chance of life being preserved by any other means.

2. Partial section is a safer and more successful operation than entire removal of the gland. Although the dangers of excessive hemorrhage and adhesions exist in some cases, the subsequent appearance of mucous emphysematous symptoms need not be feared, as the part of the gland left seems to be capable of continuing in its function. The operation, however, should not be performed unless to relieve some urgent symptom.

The performance of the operation varies slightly, with the amount and part of the gland to be excised. When the tumour is formed by an enlarged and projecting lobe, the whole mass should be removed in the manner already described for "Removal of the Lobe," as it is a safer and more satisfactory method than that of insulating the growth as far as possible and transecting the pedicle with a needle armed with adouble ligature, which is tied round each half prior to cutting off the tumour (Spence, Surgery, 1817, p. 89). When the lateral lobe is to be removed, the operation is to be conducted, as far as it goes, exactly on the same principles as those laid down for excising the whole gland, only that the isthmus is to be exposed and ligatured at one end and dissected, according to
whether it is to be removed or not along with the diseased lateral liole. Biboth (luniego; Bulletin of the Royal Liverpool Hospital) recommends dissecting the tumour from the surrounding healthy gland tissue. He describes his method of proceeding as follows: - the incision must be carried through the capsule and sometimes into the gland substance; the tumour must be separated cautiously with fingers care being taken not to lacerate the parts, or tear the bronchial wall away too forcibly, as the skin and arteries are very thin and easily ruptured. Great care must also be taken not to detach the white coat of the wound, instead of merely the bronchocle, or muscle, right through until it has been previously ligatured or secured on its proximal side, as soon as the capsule of the tumour is distinctly exposed. The knife and scissors must be laid aside. - the mucous membrane is then separated from the primary incision is to be made. In some instances, "mucocleation of cyst" has been performed. Dr. Daughton Jones (Lancet, 1877 M.I. p. 878) records a case where he performed the operation; he separated the cyst by an incision in the middle line of the neck, and having the cyst pushed forward into the wound, he carefully dissected it out, ligaturing each bleeding vessel as it was cut through. Dr. Doree (Lancet, 1879 M.T. p. 682) in performing the same operation, after exposing the cyst emptied it of its contents, and then cut away the sac except its bottom which was adherent to the trachea. Recovery took place in both cases.

In concluding the operative treatment for spheniform cysts must be said concerning Tracheotomy and Laryngotomy which may sometimes have to be performed as a palliative measure to relieve danger or distressing dyspnea caused
by pressure of the tumor upon the trachea. During the thyroid enlargement, especially when downward, it is sometimes impossible to insert a tube below the isthmus. In these cases the larynx may be opened, and if necessary the thyroid cartilage divided and a catheter or long cannula passed down beyond the obstruction. Unfortunately the result of these operations is more often than not unsatisfactory, on account of the air not passing freely enough through the tube, or from the trachea being compressed very low down in its course by a subternal enlargement of the thyroid gland.

**Ketosis** and **Myxodema** are diseases associated together by a similarity of symptoms and a mutual relationship of changes in the thyroid gland. Ketosis presents 2 varieties - the "endemic" and the "epidemic.

**Endemic ketosis** has long been associated with certain districts, but the connection has been but ill understood. There, ketosis in endemic bronchitis never fails to be abundant, but bronchitis prevalent in places where no ketosis exists. With but few exceptions, endemic ketosis is found among endemics, that is, the majority of those suffering from bronchitis are not affected with ketosis. It has been said that when the parents or grandparents for 2 generations have been generally ketonic, the disease is usually met with in deep valleys surrounded by lofty mountains, where the air is stagnant, and where the inhabitants are exposed to direct rays of the sun, and often to influenza from marshes, and are subjected to faulty habitations built in close, hot, humid situations that
cretinism abounds most children removed when young from
the valley to higher and healthier localities escape its disease
and those that already suffering from cretinism improve. (Will
son Paull Phipps, Ed., M. P. p. 32). — The appearance is
particularly striking; the body is much stunted, the head is very
large, the face features are out of joint, the eyes are set wide
apart and separated by a flattened root of the nose, the nose
and chin are large and lopsided, the lips thick, and the tongue
protruding; the limbs are short, the hands and feet short, thick
and broad, the muscles flabby; the skin is dark and thick
and often pendulous; the hair is black and fine, and the
mental faculties are as deformed as the body. The idiocy varies
much in degree, from mere utterance of a speechless
speech and purpose to complete obliteration of intelligence.
Many uterine are dumb, some are blind, some are deaf, and the
latter under all their operations; the tone is inexcusable. The
deficiency of nature, and they are not Sherman, self-efficient.org.
animal impulses. (Malone Paull Phipps, M. P. p. 7). The
apparatus is a much rarer affection and usually with
out any apparent cause: it has not been described until compar
only recently. In many of its symptoms it resembles the Must
variety, viz., the stunted body, the large flattened head, the facets of
expression, the broad face, the widely separated by the flattened
root of the nose, wide open mouth, thick lips and broad nose,
the broad hands and feet. (Tagge, (1871 M. P. p. 322.) In other
cases is a peculiar twisting of the spine, ribs, and limbs.
Young cases the fontanelles remain open for a considerable period. In all cases described there is a greater or less amount of mental deficiency; the mind is slow and dull, and the memory impaired; the subject is of the disease becomes unable to express his ideas; he is not consequently deaf or dumb, and the speech is usually interfered with. Being slow, monotonous and the word often incompletely pronounced. In long-standing cases Dr. Fagge (Lancet 1871, XII. p. 312) describes it being quiet, good-tempered, placid, and contented with no desire for mischief or formidating about locomotion, being usually slow, and the gait uncertain and tottering. — The skin in some cases is dry, bald and waxy-looking, in others dry and scaly (Routh, Lancet 1882, XII. p. 526; Knee, Lancet, 1882, XII. p. 316-314). In the majority of cases the blood is clear or apparently so (Fagge, Lancet, 1871, XII. p. 342; Brack, Lancet, 1871, XII. p. 353; Barnard, Brit. Med. J. 1882, XIII. p. 325). In some cases got the skin (Kirk, Lancet 1882, XII. p. 364). In many cases no encysted fatty tumours — while formation is inapplicable — are found the gland in the side of the neck, just external to the sternohyoid muscle, and immediately above the clavicle, these vary in size from well marked tumours to a slight apparent fullness, they also seem to vary in size at different times during the lifetime of the patient (Dr. Fagge, Lancet, 1871, XII. p. 312; Brack, Lancet, 1871, XII. p. 353; Routh, Lancet, 1882, XIII. p. 327; Kirk, Lancet, 1882, XII. p. 353). In many instances the temperature is subnormal and a cold sensation is frequently complained of (Kirk, Lancet, XIII. p. 327; Kirk, Lancet, 1882, XII. p. 353). Dr. Fagge (Lancet 1871, XII. p. 312) describes operatic acti-

vism as differing from endo
cine, in the following respect:— in
Sprague cutaneous fever intensifies local morbidity influences evident in the fetus and mother. The disease arising in the offspring of healthy parents from no apparent cause. Sprague cutaneous may show itself for the first time as late as the 9th year, while the endemic variety is 4th year to its limit. In Sprague cutaneous the hypoplasia is usually wanting and the supra-clavicular tumors present, while in endemic cutaneous cutis most commonly, the supra-clavicular tumors have never been noticed.

The cause of cutaneous has long been an enigma. In the endemic variety, it is known that its premature symptoms of the back, periorbita and occipital, to be the essential factor in the protection of its disease. Atkin (1887) in 1884 and 1885, it is believed it may be concluded that a poison exists in association with lime and magnesium in geological formation. This action induces undue ossification and thickening of the base of the cranium, tending to diminish the size of the foramina for the blood vessels; and that it is fair to connect unusual quantities of lime taken into the system with such premature and abnormal conditions. It has been considered that the premature ossification would prevent the molding process though it might prevent arrest of growth. (Lancet 1877, M.I. p.66) and besides, this cause cannot be brought to bear upon Sprague's cases of cutaneous where no excess of lime and magnesium salts have entered the system. It was (Lancet 1877, M.1. p.342 and 1883 p.176, 1879) considered that the hypoplasia might have a counteracting influence in an unknown cause of cutaneous which such everywhere in endemic districts; while the cause is the strongest the stand hypertrophies until it is no longer able to overcome the tendency of the disease and then cutaneous begins. Again when the stand atrophies, its function destroyed, cutaneous in its worst form appears.
England when the cause acts only to a low degree of power, it is easy to understand why a long, firm contraction should exist when the function of the hair is destroyed by atrophy or degeneration. 

Even if it seems more probable, that loss of function of the hair and its effects on general system in some manner, at present inapplicable, and produces arrest of mental and bodily development, as will subsequently shown.

Mumps is a rare and but comparatively recent disease. Described in 1873, Sir W. B. Bull brought it into notice for the first time, under the name of "fibrotic state in adult women." In 1877, Dr. Wood gave a detailed account of its anatomical and clinical appearances and christened it with the name of "Mumps." 

The disease is essentially one of adult life and is almost entirely confined to the female sex, though it has been known to occur in men. (In the London, 1881, 85 p. 109; and in Lancet, 1883, 85 p. 829, 832.) 

The symptom most commonly noticed is a feeling of weakness and languidity, followed by swelling of the face and body, and gradually increasing nervous failure; after a longer or shorter period, the disease becomes thoroughly established, when the sufferer presents the following characteristic appearance:—What will be noticed is the general swollen look, the puffy round face, the hollow transparent web-like skin and pendulous transparent eyelids; the swelling, although it seems to be ordinary edema, does not peter, its firm and elastic and containing no signs of granulation, the skin is found to be dry, rough and scaly, and preparation to be entirely or almost absent. 

A feature undergoes a change, th
once being broad, the lips round, thick, and blue, and the same dullness to the general expression dull and vacant. The cheeks bronzy or pink, pale, dilated capillaries. The same torqued soft palate and faceless also partake in the general enlargement. The teeth and nails are brittle and the hair in all parts of the body tends to fall, preceding partial incomplete baldness. The hands are thickened and have a paper-like appearance. The circulation is weak and slow, a constant sensation of coldness is complained of, the axillary temperature is subnormal, and in some cases has been found unequal on opposite sides of the body (3d lanct, 1874, 147-157, 158-167, lanct, 3d lanct, 32d lanct, 1873, 157). The urine is diminished in quantity, and in a low specific gravity; its secretion is invariably diminished (3d lanct, 1873, 157) and in a few cases a trace of albumen has been found (3d lanct, 1874, 147-157, 158-167, lanct, 3d lanct, 32d lanct, 1873, 157). In the hand can be felt in most cases, but in many instances, it has been found to be enlarged slightly (3d lanct, 1873, 157, 158). The general temperament is usually tranquil and undisturbed by emotion (3d lanct, 1873, 157, 158) but sometimes irritability is very marked (3d lanct, 1874, 147-157). The speech becomes slow, deliberate, and indistinct; the voice is low, monotonous, and sometimes thick, and there is a general slowness of perception, thought, and action, but as a rule there is no impairment of the special senses or intellect—beyond some loss of memory (3d lanct, 1873, 157). However, diminished ordinary sensibility, along with diminished reflexes, and feeble muscular action to feverism has occasionally been observed (3d lanct, 1873, 157, 158, 3d lanct, 1874, 147-157). In some cases epilepsy from seizures have been noted (3d lanct, 1874, 147-157, 158). The fact becomes slow, languid, feeble, and
Sometimes staggering, and the sufferer feels a pain about and after a difficult in lifting his feet (Dewit, Lancet, 1863, II, p.323).

From the foregoing close resemblance is seen a link between cutaneous and myxedema, a fact which will be brought out later on.

Autopsy examinations have only been made in a comparatively few cases, but in all that have been made the thyroid gland is seen to be atrophied—tough in its living subject, enlargement has occasionally been noticed. (D. J. Lancet, 1877, MI, p.10) describes the gland in one case which he examined, as being reduced to one third its normal size, tough, and firm, having a rubbery feeling. W. B. White in one case found it to be atrophied and to have none of its regular structure remaining (Lancet, 1884, MI, p.77) and in another case to be atrophic.

The remnants of the gland contain much epithelial debris, and present a sodden-looking, degenerate condition of its connective tissue (Lancet, 1885, MI, p.343). Thus from the constant atrophy and degenerate condition of the vessels, the changes in the gland are the better shown as a primary affection, and secondary as an in the parts.

In the various organs and structures of the body—ultimately indirectly or directly—it is usual to find the connective tissue affected and its fibrils separated by clefts containing mucin (D. J. Lancet, 1877, MI, p.10, and 1879, MI, p.343). H. H. H. (Lancet, 1882, MI, p.71) found this in myxedema in mucin in the body was double in amount to what it is in health. It has been discussed whether this change in the connective tissue is due to degeneration, infiltration, malnutrition, or malformation, but it seems most probable that it is due to an imperfect development. The brain, spinal cord, and sympathetic nervous and ganglia are frequently found to partake in this swelling, there does not seem to be any alteration in the nerve elements beyond what can
be accounted for by small pressure produced by the connective tissue changes (D. White, Lancet, 1871, 2, p. 399, and 1874, 2, p. 318). The kidney is sometimes healthy (D. White, Lancet, 1871, 2, p. 399, and 1874, 2, p. 318) but at this time it presents the appearance of a slight orattered condition; true, it has been found to be tough, and until the cortex is slightly diminished. In other instances (D. White, Lancet, 1871, 2, p. 399) the increase of struma (D. White, Lancet, 1874, 2, p. 578) is noted, and in the later stages of the disease the kidneys and accompanied by hyper trophy of the heart, ascites, and distress (Lloyd, Lancet, 1867, 2, p. 39). The liver may also present an increase of struma (D. White, Lancet, 1871, 2, p. 399) and a proliferation of nuclei in the intercellular connective tissue (D. White, Lancet, 1874, 2, p. 778 and 1875, 2, p. 348). The arterial walls are greatly thickened, and for this reason the lumen of the vessel is diminished (D. White, Lancet, 1874, 2, p. 10; J. H. P. 10; and J. H. P. 10; and J. H. P. 10; and J. H. P. 10; and J. H. P. 10; and J. H. P. 10; and J. H. P. 10). Thus, as said earlier, the mutton and nervous changes in the cell circulation, deficient nutrition, and the interference with the function of the various organs, are all available for this alteration in the connective tissue.

Various theories have been propounded as to the causation of this disease. 1. First (Lancet, 1871, 2, p. 65) rejected a belief that the various symptoms were due to a failure of the action of the skin, and as general want of peripheral stimulation of nerves from their termination being enclosed in a bed of mucus. The result being such that the same as when a rabbit's skin is varnished. T. Goodall (Lancet, 1871, 2, p. 378) pointed out, that although such an influence might operate in early life before the brain had developed, it was unlikely to occur in the adult. 2. Libaraff (Lancet, 1871, 2, p. 64) and P. Disse (Lancet, 1871, 2, p. 378) believe that the disease was due to some alteration in the central nervous system. 3. P. H. T. C.
tuated. Some profound lesion of the sympathetic to the kidney. This theory, however, is disproved by the fact that the sympahtetic cells in the ganglia are healthy, and yet myxoeolma has been followed up in numerous experiments destroying the sympathetic.

Mahomed (Lancet, 1851, XI, p. 573) contended that myxoeolma was a form of Bright’s disease — using the term in its most extended sense to include “urine capillary-phlogis,” when the kidneys are not necessarily affected. He supports this theory on the strength of albuminuria and nephritic swelling in 30 percent of the reported cases of myxoeolma, and the appearance of the kidneys in postmortem examination. He accounted for the recurrence in albuminuria by imag- ing it to arise from a myxoeolma undergoing organization and for the nervous symptoms by the edema interfering with the nervous system.

S. Potter Harvey (Lancet, 1851, XI, p. 573) found the thoracic sympathetic ganglia implicated in a degenerate and atrophic pleura in one case of myxoeolma; and in consequence he believed that the various symptoms were due to the implication and perhaps inflammation of the ganglia.

Sir John Bell in 1873 imagined that atrophy of the thyroid might in some way be the cause of the disease, and on account of the similarity of its symptoms to those of hyperparathyroidism — which S. H. Jeffreys and M. Berstein believed to be due to atrophy of the thyroid — he called it “a hyper-oid state.” Until 1883, however, it was generally believed that the atrophy of the thyroid was of a secondary nature, like the changes in the kidney and the organs, and consequently not connected in any way with the causation of this disease; but now it appears that the original comparison made by Sir John Bell is after all nearer the truth than any of the more recent theories.

In November 1883, Dr. Seiont brought before the notice of the clinical So-
List of London the operations made by Prof. Kocher of Bern in curing the consequences of excision of the whole thyroid (pub. Lancet, 1883, Nov. 9th). Kocher had partly or totally excised the thyroid in 107 cases; in one case of total excision he was so much struck by the extended condition which gradually followed the operation that he immediately rejected all that upon whom he had operated except the most recent ones: to prevent themselves for the purpose of examination. But 107 summoned only 84 attended—67ylon had undergone partial, and 18 complete excision. The 18 were all found to be in perfect health, but nothing was very different with the 18 patients; in 2 only was there no change for the worse in the general health, and it was most remarkable that in one of the cases a small accessory thyroid gland had undergone a hyperplastic change, and in the other a recurrence of the goitre had taken place; in all the remaining 16 cases of total excision there were less well marked signs of derangement of the general health were manifest. New changes were of a progressive nature being more developed in the older than the more recent cases. Kocher describes the symptoms in the following order: a few months after the operation early fatigue, weakness, and feeling of heaviness were complained of, and in many cases these were preceded by a sharp pain in various parts of the body; soon afterwards a sensation of coldness, especially in the extremities, was superadded; in winter time the hands and legs swelled, and became bluish-red and cold and the patient suffered from chilliness; the mental activity decreased, thought, speech, and movement became slower. Simultaneously with the above symptoms, swelling of the face and body made its appearance, sometimes at first only transient, but soon becoming permanent; the eyelids were th
fast to swell and to become somewhat transparent. Soon followed by the nose becoming thick, the lips swelled, the hands and feet swollen and the waist stout, the skin became dry and lost its elasticity; the hair fell out, and in the more advanced cases anaemia was a very well marked symptom. In those cases where the patient was still growing at the time of the operation further development became markedly arrested.” — At the time Bockus published these observations, he was perfectly unaware of the existence of such a disease as myxoedema. Similar observations have been made by Prof. Remond and others, and to a lesser degree in a case operated upon by Prof. Leech in 1880 (Lancet 1883 Oct 10 p. 902).

From the identity of these symptoms with those of myxoedema and mycteria, Mr. Somm conduced that all 3 were one and the same disease and all due to one and the same cause. My loss of thyroids and again a year later Mr. Somm gave an account of a case of a young man 28 years of age, whose thyroid had been entirely extirpated at the age of 17 years by Prof. P. Moore of St. Louis. Prior to and shortly after the operation, the lad was bright and lively, but later on he changed in a most remarkable way; at the age of 28 he has gradually assumed many of the characteristics of a female, his conformation being that of a boy and his head the size of an ordinary woman. His expression was idiotic, his lips, eyelids, and face swollen, his hair thin and pale thin, his tongue, palate and tonsils slightly thickened, the circulation feeble, sensation and muscular power were almost intact, and his mental disturbances confined to the exhibition of apathy (Lancet, 1884 Oct 777). — Mr. Boley has produced a myxoedema in a monkey (Lancet 1884 Oct 1 p. 877), as has Schiff in a young cat (Lancet 1884 Oct 1 p. 777) by removal of the entire thyroid.
These instances undeniably show that when the thyroid body has been entirely extirpated, a train of symptoms gradually ensue which resemble myxedema in every particular, and that when a part of the gland has been left behind, or an accessory thyroid exists no such symptoms are observed. They also show that when total excision has been performed before full development of the system has taken place, the growth of the mind and body is arrested while the head itself continues to enlarge - a condition identical with cretinism being the result. Again, not only do cretinism, myxedema and the condition produced by complete removal of the thyroid gland resemble one another in symptoms, but also in all 3 affections the thyroid is deeply implicated.

In consideration of the foregoing I have little hesitation in adopting the hypothesis that complete arrest of the function of the thyroid gland - benefit about either by atrophy, degeneration, or total extirpation - is the cause of these peculiar symptoms, and also that these 3 affections - cretinism, myxedema, and the condition produced by complete removal of the thyroid gland - are caused by the same disease, differing only in degree, which in turn depends upon the time of life at which these symptoms first make their appearance.

The question may be raised that occasionally in myxedema and very occasionally in cretinism, the thyroid body is enlarged and therefore not deprived of its function; but there is no reason to doubt that such an enlarged gland may have all its normal gland structure destroyed, and also that the inferences in true, viz. That complete destruction of the normal structures does not necessarily follow upon enlargement, for very many cases exist both small and great, whether or not cretinism symptoms are observable, and where healthy gland tissue is found to exist.
Speculations have been offered as to how the thyroid gland exercises influences on the tissues of the body, and as to how these exertions change tissues. Dr. Simon (J. Anat. 1888, II, p. 962) thought that in absence of the thyroid gland could lead to arrested development of the mind and body, it might also lead to arrested development of the higher forms of organized tissue, and that under such conditions the secret type of organized tissue,—the foetal tissue,—mucin, was mainly formed and in excessive quantities. In this way excessive mucin in the tissues, which is supposed to be the essential feature in Dystrophia, might possibly find its explanation. — T. Baker (J. Anat., 1883, 15, p. 164), considering that the thyroid gland exercises some general influence on the composition of the blood by removal of its soluble constituents, thought it possible that elimination of colloidal material in its constituent from the blood, might be prevented by sclerosis, atrophy of the gland, and that a transudation of these substances into the connective tissue might take place. He presupposes that the colloidal material on its way back to the circulation through the lymphatics, becomes changed in character.

These suppositions are, however, purely hypothetical, and it is impossible to come to any definite conclusion upon these points until the exact function of the thyroid gland has been discovered; when this has been done, a new chapter in medicine will have to be written.
Exophthalmic Goitre (Graves or Basedow's Disease)

It would be out of place here to enter fully into the description of this disorder, as its enlargement of the thyroid gland forms but a link in the long chain of morbid conditions which constitute Exophthalmic Goitre. The thyroid enlargement therefore is to be looked upon more as a symptom than as a complaint in itself.

Exophthalmic Goitre is by far the most commonly observed in young adult women, but occasionally it is met with in the male sex (Bouchard, Ann J Med Sci. 1860, I, 385; 1861, I, 652). It may come on suddenly or gradually, and either form is apt to occur in paroxysms which vary in severity and duration, and are usually most marked at the menstrual periods. Before the actual symptoms of the disease commence, the patient will generally suffer from anaemia, general weakness, and frequently, menstrual derangement.

The disease is characterized by three symptoms: (1) Palpitation of the heart with pulsation of the great vessels of the neck; (2) enlargement of the thyroid gland, and (3) prominence of the eyeballs. These symptoms are almost invariably accompanied with derangement of the alimentary system, altered menstruation, and an occasionally morose, irritable temper, and selfish disposition.

Palpitation is almost invariably the symptom noticed. It tends to appear in paroxysms brought on by excitement or emotion, usually, though possibly for the first time by some mental shock. The heart's action becomes very rapid, violent, and sometimes irregular, and its impulse can frequently be seen through the chest wall; along with this pulsation is very evident in the carotid arteries, the internal jugular vein is often distended, and frequently large dilated veins ramify over the thyroid body. The radial pulse is usually habitually small and rapid [From Large Surgery, 1877, p. 226]. Though in some cases it is pess
Normal (Wilson, Janet, 1879, p. 207), and generally there is a great difference in the pulsation of the carotid and radial pulses, the former being silent and weak, the latter comparatively feeble. A systolic murmur is heard as a rule on the base of the heart and the vessels at the root of the neck, due to some functional cause generally, but in some cases to organic disease of the heart, including mitral conditions of the aorta and hypertrophy and dilatation of its cavities (Trousseau, Clin. Med., Paris, 1868, and Janet, loc. cit., pp. 348-357). The blood is deficient in red corpuscles, and the patients suffer from the effects of anaemia: weakness,iddiness, faintness &c. There is no doubt that the vessels of the neck dilate and increase in calibre—especially the thyroid arteries and veins (Trousseau, Clin. Med., 1854, p. 329)—and in time their course becomes tortuous, and their walls thicken.

Enlargement of the thyroid gland is usually the first symptom to become manifest; occasionally it occurs it is entirely absent. It may affect the whole gland, but very commonly the right lobe is the site of the first enlargements which shows an increase in size (Trousseau, Clin. Med., 1854, p. 325; Smith, Janet, 1874, p. 162; Bey, Janet, 1876, p. 22; positivity, 1877, p. 329; Tressil, Janet, 1878, p. 357). The enlargement as a rule comes on gradually but sometimes quite suddenly (Trousseau, Clin. Med., 1854, p. 325); as it is due at first entirely to dilatation of its blood vessels, it is subject to considerable variations in size from time to time, being the largest during the "paroxysms"; but very successive engagement of the permanent enlargement. The tumour during its earlier stages is soft, smooth and elastic to the touch, and transmits a pulsatile or peculiar throb, or sensation to the finger. Very frequently too, a hum like that of a live horse is heard over it with the stethoscope: cases are on record where such enlargements has been mistaken for aneurysms (Vieau, Le Prince, 1847, p. 227; Trousseau, Clin. Med.,
(R. J. 1826) As the disease advances the swelling gradually becomes firmer, harder, loses the white or part of its palatable nature and assumes the character of an ordinary goitre; this is due to fibrous infiltration and subsequently to an overgrowth of the connective tissue elements of the gland; in very rare cases, atrophy has been the final result (Rousseau,elin med. 1271, p. 219). The enlargement is seldom great, but it is a common occurrence for the patient to complain of a suffocating sensation during a paroxysm caused by the engorgement of the Hypophysis producing pressure upon the trachea. Sometimes however, the tumor may be of large size and produce distressing dyspnoea (Broadwood, J. Med., 1849, 1851, p. 635) by its pressure.

E Smith (J. Med., 1841, 1851, p. 635) relates a case where dysphagia was produced but no dyspnoea. Gravet (elin med., p. 288) suggests that the sensation of suffocation or dyspnoea occurring during attacks of palpitation of the heart in nervous women is due partly to a purely nervous origin but is usually ascribed to an acute engorgement of the Hypophysis vessels, which subsides as soon as the attack is over. This suggestion is founded upon the fact that "the lump in the throat" is distinctly referred to the situation of the Hypophysis, and that the gland has actually been seen to enlarge during an hysterical paroxysm — notifications, which occasionally occur in the neck may be due, either to changes in the respiration, or to the pressure of the tumor upon one or both recurrent laryngeal nerves (Rousseau, J. med. 1851, p. 219).

Pathological investigation in this condition of the Hypophysis shows that in the first stage of the disease nothing is abnormal but a transient dilatation of the Hypophysis vessels; but very soon severe oedema and increase of the connective tissue of the gland begin to produce a permanent enlargement. The arteries gradually become dilated.
tumours are truly anastomosing and the veins varicose, giving the tumour a spongy cavernous appearance, resembling erectile tissues. Intertstitial deposits of a homogeneous glistening material (Palermo, 1874, M.I., p.576) and occasionally blood are sometimes to be met with (Edson, 1879, M.I., p.937). Lipoid formation is rare (Roberts, Syph. 320, M.I., p.309), but now and again occurs (Foucault, Clin. Med., M.I., p.57). Occasionally the gland structures undergo a final transformation, consisting in atrophy of the gland brought about by the contraction of the newly formed connective- or cicatrical-tissue, the gland tissue being enclosed and compressed by the thickened and contractile trabeculae.

Foucault (Clin. Med., M.I., p.576) considered that in this disease there was hypertrophy proper of the thyroid gland, i.e. of the acini or vessels; this however is, in my opinion a doubtful point. The connective tissue certainly does hypertrophy, but the number vessels probably does not increase: thus true hypertrophy cannot be said to exist.

The prominence of the eye ball is the first symptom and like the other may occasionally be absent. As a rule it occurs equally in both eyes, but occasionally only one eye is affected, or one eye more than the other (Cullen Lancet, 1878, M.I., p.307, and 87, M.I., p.389). The amount of exophthalmos varies greatly in different cases; it may be so considerable that the eyelids will not close over the globe of the eye, and in some cases, the eye was entirely pushed out of the orbit and had to be replaced by the fingers (Foucault, Clin. Med., M.I., p.576). As a rule vision is unaffected, although the patient may become long without vision and the movements of his eye impaired. A loud hematic murmur may usually be heard on auscultating over the eye.

The primary cause of this condition is probably a congestion of the vessels hi-
hind the base of the eye, which pushes it forwards; this is followed by dryness and increase in nutrition in the adjacent and cellular tissues in the periantrum, whereby they become hypertrophied (Trousseau, Clin. Med. 1811, p. 373). Thus, if death takes place in the early stage, the prominent eyes sink back into their orbits from collapse of the perfectly dilated vessels, but in the later stage their prominence is maintained. Again, cause asserted is, the contraction of the muscular tissue in the membrane covering the sphenomaxillary fissure.

In the state of the eye itself, congestion, strabismus, and pigmentary deposits have occasionally been found (Schoen, L. O. 1879, Med. X. 77). The minor or secondary symptoms, if this disease may be disposed of quickly. As before remarked here is invariably anemia, and in some cases complete bilirubinuria; the patient feels weak and is subject to frequent peristalsis and a rise of temperature. Roberts, Brit. med. J. 1874, p. 222). The appetite is generally abnormal, by either being diminished and fitful, or greatly increased, in all cases the food is poorly digested and in consequence causes pain. Sometimes diarrhea is a marked symptom, but while it occurs or not, a gradually progressive emaciation takes place. If the patient has not attained full development, growth usually takes place with wonderful rapidity. In almost all cases alteration of the urine function is very noticeable; menstruation being at first irregular, then small, and accompanied by considerable dysmenorrhea. In the more advanced stages dysmenorrhea accompanied by leucorrhea. Leucorrhoea is not uncommonly met with. The patient’s temper becomes quick, irritable, and sometimes even violent; their disposition selfish and exacting, their manner restless, and their sleep broken. (Trousseau, Clin. Med. 1811, p. 373.)
Euphthalmic goitre, when not complicated with other diseases, such as cardiac troubles or diabetes, terminates most favorably, although its course is a long one; all its symptoms gradually diminishing until a perfect recovery results.

The causes 1. Predisposing seem to be all the numerous agencies by which the blood becomes impoverished and the bodily vitality lowered; such as, privation, insufficient food, bad hygienic surroundings, overwork, excess of sexual intercourse, leprosy, leukaemia, pimply skin, etc.

2. As to the actual cause of the various symptoms, much discussion has taken place, and various theories suggested. The theory which seems to be most rational is described in the following words by Roberto (PRACT OF MED. ED. 4. Part 6. p. 209-10) "Euphthalmic goitre is believed to be the result of paralyses of the sympathetic nerves supplying the vessels of the thyroid gland, any of the head and neck, and undue stimulation of the accelerating nerves of the heart. Here is no satisfactory evidence in support of the notion that the nervous disturbance is due to any organic change in the lower cervical ganglia of the sympathetic, as has been suggested, although increase in the connective tissue and diminution in the nerve cells in these ganglia have been described." - Trousseau (Examen, Vol. 2, p. 178) believed that temporary congestion of the sympathetic nerve, or a permanent structural alteration of the ganglionic nervous system was the cause; but considering that all the blood vessels about the head and neck are more or less congested, it is natural to suppose that those supplying the sympathetic nervous system may partake in the same condition, and that in some cases excess of fixation and proliferation of the connective tissue may further result from such congestion. If this be so, it would account for the
pathological condition sometimes described in the cervical sympa-
thetetic ganglia, and would show that such changes are only
secondary in nature, and therefore not connected with the cause.
No definite or constant pathological condition has ever been
discovered in the brain, medulla oblongata, of the sympathetic
nervous system; thus it would be useless here to say more than
that the thyroid enlargement is undoubtedly caused by the
dilatation of its vessels, the result of paralysis of their vegeto-
nervous supply; but where and how this paralysis originates, it
is at present impossible to say.

Treatment must be directed chiefly to the improvement of the gen-
eral system: thus Tonics, such as Iron and Quinine, along with
good food, purgative, cleanliness, and bodily and mental rest
are all especially to be recommended. Belladonna has been
found most useful in the hands of Dr. Smith (Journ., 1874, p61,
1902). Digitalis, from its action upon the heart, may sometimes
be beneficial. Sipt, and Glycerine on the sympathetic has
been recommended, but apparently are of but little use.
Restlessness etc. is to be controlled by such drugs as Stimula and
Promedol of Potassium. When the thyroid almost is considerable
the eye should be protected by a small pad of lint applied over
the closed lids and held in position by a lightly applied band-
cage. With regard to the Thyroid gland no special treat-
ment is required as long as it gives rise to no pressure sympa-
thetic lesion (blind spot, 105, p 350) recommends that ice should be ap-
plied on the gland in cases of Suffocative Dyspnoea, and even to
alleviate the Sensation of choking during a paroxysm. Since this
method fails and life be really endangered, some operative mea-

must be had recourse to: thus, tracheotomy may have to be performed, or a division of the thyroid isthmus may be made in the method already described. It should be borne in mind however, that in this disease the vessels are greatly dilated, and consequently that if every care be not taken, excessive or even fatal haemorrhage may take place.