

SOME OBSERVATIONS UPON

THE GOITRES MET WITH IN THE DISTRICT OF CREWE.

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Goitre is a condition which occurs with considerable frequency in the district of Crewe, a very large number of people being affected with it in various forms. Although it is frequently met with, it does not seem to be of the type usually described as "endemic goitre", a matter which will be discussed later, but rather to be of the nature of what has been called "simple goitre". While it does not appear to be a very serious condition from the point of view of life it causes many of its victims a considerable amount of discomfort, at least for some time, and is deserving of consideration on that account.

The following types of goitre can be distinguished, the classification being made on clinical grounds only:

- (1) A persistent enlargement of the thyroid gland unaccompanied by symptoms other than fulness of the neck. This corresponds to the description of "Simple Goitre" given in the text-books of General Medicine (Price, Osler), but nevertheless this is perhaps the least common form found here. It is usually discovered accidentally in the examination of a patient for some other complaint.

- (2) A persistent enlargement of the thyroid gland accompanied by what are regarded as signs of mild thyroid deficiency, such as dryness of the skin, thinness of the hair, neuralgic pains, sensation of weariness, etc. This corresponds in many respects to the simple Toxaemic goitre of McCarrison (The Thyroid Gland, p.167) although not in all particulars. The enlargement in these cases is usually diffuse, but sometimes irregular, and while it varies in size is seldom so large as to interfere with breathing.
- (3) A persistent enlargement of the thyroid presenting signs of mild or severe hyperthyroidism. This group includes cases which might be classed as cases of secondary Graves disease or "formes frustes" of that condition. In mild forms the clinical picture is that described by Bauer as "thyreotoxische Konstitution" (Bauer. Konstitutionelle Disposition zu Innern Krankheiten, p.90). In severe cases of course the picture is that of Graves disease. In these cases the thyroid enlargement is diffuse, and several cases are sometimes found in one family.

I do not propose to speak at all of cases which can be definitely diagnosed as due to new growth. Such a case would be one where a single localised enlargement was found in an otherwise apparently normal gland.

It/

It is possible, however, that some of the cases included in the above groups may be due to neoplasm. But cases where one finds a single definite adenoma are rare in this district. I have only seen two in two years and they are not included with the cases here reported.

I do not propose to speak either of cretinism or of myxoedema (as a disease) at any length. McCarrison defined myxoedema as "a condition of cachexia, resulting from loss or impairment of function of the thyroid gland, characterised by depression of all vital processes, mental failure, and trophic disturbances of the skin and subcutaneous tissues (McCarrison, The Thyroid Gland, p.170), but that definition would apply quite well to some of the cases included in the second group of goitres. Myxoedema is really only a symptom of marked thyroid deficiency and one naturally expects it where degenerative changes appear to have occurred in a goitre.

Neither cretinism nor deaf-mutism is at all common in Crewe. In two years experience in a large practice I have only seen two cases of cretinism. In one of these cases the mother had a large nodular goitre, but in the other case both parents seemed quite healthy.

I now propose to consider the three groups in a more detailed manner. Where it is necessary to indicate the size of the goitre, I shall use the classification of the Swiss Goitre Commission, which was as/

as follows. (De Quervain, Goitre, p.62).

Class 0. Thyroid not felt. Trachea can be felt from larynx to supra sternal notch.

Class I. Thyroid hardly felt on palpation. It fills the depressions on either side of the trachea between it and the sterno-mastoids. It occupies the supra-sternal hollow and is palpable as an elevation situated transversely on the trachea.

Class II. Thyroid easily felt; the upper pole and as a rule the lower poles of both lobes can be made out but the outline of the neck is not markedly affected.

Class III Thyroid easily felt and the neck is obviously enlarged by it.

Class IV. The shape of the neck is altered sufficiently to be called a goitre.

Using the above method of grouping, however, one must consider the build of the subject as in fat people a large gland will produce less alteration in the contour of the neck than a smaller gland in a thinner person. Glands grouped in Classes 0 and I however can hardly be called goitrous.

THYROID ENLARGEMENT WITHOUT OTHER SYMPTOMS.

In most of the cases of thyroid enlargement where there are no symptoms to suggest altered function, the enlargement is not great, and the condition is accidentally found. This type of enlargement is illustrated by the following cases:

John A. Male aged 18. Complaining of "sore throat". Tonsils were enlarged and inflamed. Upper cervical glands were enlarged and tender. Thyroid gland was firm and easily palpable although not visibly enlarged. No symptoms suggesting altered function of thyroid were present. Patient has always enjoyed good health and felt quite well up to onset of present illness. The throat trouble quickly disappeared under treatment but the thyroid enlargement persisted for a week after the throat was clear. After that time the patient returned to work and was not seen again.

Harry H. Age 10. Had a severe fall injuring shoulder. Thyroid forms a visible swelling in neck, the enlargement being quite diffuse. His mother has a small goitre with some deficiency signs (loss of hair, cold dry hands, headaches, constipation). He has been growing very rapidly lately but has always been healthy. Measles at 9. Otherwise he has had no illnesses and has no signs of ill health at present.

Annie G. Age 23. Acute attack of vomiting after eating fish. Thyroid readily palpable, diffusely enlarged, fairly firm. There were no signs of deficiency or hyperfunction. She has premenstrual dysmenorrhoea. Bowels are regular. Heart sounds seem rather feeble but otherwise she appears healthy. Thyroid enlargement persisted for three weeks, after which patient was lost sight of.

James S. Age 17. Acute bronchitis. Thyroid visibly enlarged. Enlargement diffuse. Bowels were regular. Nothing abnormal was noticed about skin, hair, or excitability. Nails blanch easily, but changes in temperature do not seem to trouble him.

Mary H. Age 23. Fur-Dermatitis of neck. Thyroid was palpable without any symptoms either of hyperfunction or deficiency. Patient stated that it was formerly very much larger but gradually subsided without any treatment and has not troubled her for about 5 years.

All these patients were unaware of the thyroid enlargement and considering the fact that it was in no case great and that there was nothing to indicate diminution or increase in function I did not draw their attention to it but simply treated the condition of/

of which they complained. It is interesting to note that all the cases quoted were young (under twenty) and while some were cases of acute infection the enlargement persisted after the infection had apparently subsided. With regard to the infection being the cause of the condition, in most of the cases the gland felt "firm" while one would expect a recent non-inflammatory enlargement to be soft and an inflammatory one tender, so that I do not think that the inflammatory condition from which they suffered caused the goitre. In one case there was the history that the gland had been much larger at an earlier date but whether it was then accompanied by any symptoms of altered function or not I cannot say, although I think it likely that it was.

With a view to obtaining some idea of the frequency of goitre in children, the following series of children was examined. These children were all met with in the routine of practice and were not selected in any way.

From such a small number it is impossible to draw any accurate conclusions, only one may notice that the cases showing definite enlargement are at or about the age of puberty, and are mostly boys, which is hardly what one would expect as female adults are more often affected than males. The cases of Scarlet fever in the list were examined for enlargement at the onset of the disease and in the tuberculous cases, (which it will be noted all show enlargement) the diagnosis had been confirmed by the tuberculosis officer.

	<u>Patient</u>	<u>Age</u>	<u>Sex</u>	<u>Complaint.</u>	<u>Thyroid.</u>
	A.E.	2	M	Swallowed Button	0
	B.M.	11	M	Gastro-enteritis	0
	M.J.	5	F	Otitis Media	I
	E.J.	9	F	Haematuria	I
	L.C.	12	F	Measles	I
	T.H.	12	M	T.B. Peritonitis	II.
	B.E.	4	M	Scarlet Fever	II
	W.B.	13	F	T.B. Glands	I
	J.D.	3	M	Measles	I
(10)	I.A.	4	F	Urticaria	I
	G.H.	8	M	Pulm. T.B.	II
	J.B.	5	F	Gastro-Enteritis	II
	W.P.	4	M	Gastro Enteritis	I
	J.C.	13	M	Fr. Clavicle	III
	H.H.	10	M	Injury Shoulder	II
	W.R.	9	M	Endocarditis	0
	C.T.	8	F	Measles	0
	J.B.	14	M	Scarlet Fever	0
	M.H.	9	F	Scarlet Fever	0
(20)	C.D.	9	M	Torticollis	I
	M.C.	6	F	Scarlet Fever	0
	J.G.	2	M	Adenoids	0
	W.M.	10	M	Bronchitis	I
	J.M.	9	M	Gastro Enteritis	I
	T.H.	5	M	Gastro Enteritis	0
	M.U.	10	F	Tubercular Glands	II
	A.C.	5	F	Gastro Enteritis	0
	J.C.	9	F	Bronchitis	I
	J.K.	8	M	Urticaria	0 - I
	P.D.	9	M	Fractured Radius	I

ENLARGEMENT OF THE THYROID
WITH SYMPTOMS SUGGESTING THYROID INADEQUACY.

The cases of goitre met with in this town as a rule present either symptoms suggestive of increased thyroid action or else symptoms suggestive of diminished thyroid action. It is difficult to say which is the more common condition, but the former cases are met chiefly in the Summer months and the latter in the Winter months. In both groups the most common complaint is a sense of lassitude. Strangely enough the thyroid enlargement is only seldom complained of by the patient, even when it is quite noticeable, and once the sense of well being increases, patients very often cease coming to consult us even if the enlargement has not diminished. The condition while certainly capable of causing considerable discomfort is easily tolerated as a rule and patients easily become reconciled not only to the enlargement but to many of the symptoms.

The deficiency symptoms to which I refer are those described by Falta as characterising incomplete forms of myxoedema (Endocrine Diseases. 1924. p.126) such as muscular pains, a sense of lassitude, menstrual disturbances, a sensation of cold, a falling out of hair, and a diminution of sweating.

Table indicating age and sex incidence of goitre with deficiency symptoms.

<u>Patient.</u>	<u>Age & Sex.</u>		<u>Thyroid.</u>		<u>Occupation</u>	<u>History.</u>
Annie C.	21	F	Diffuse Class IV.		Factory Hand	Good health.
Richard R	19	M	Diffuse Class IV		Fitter	Clear Height 5 ft. 11.
John N.	16	M	Diffuse	IV	Shop Assistant	Clear Height 6 feet.
Annie O.	15	F	Diffuse	III.	Shop Assistant	Good health.
Wm. M.	12	M	Diffuse	IV.	At School.	Adenoids at 4.
Herbert P.	13	M	Diffuse	IV.	At School.	Good health.
Ethel O.	23	F	Diffuse	III.	School teacher	Good health.
Mrs S.	30	F	Diffuse	II.	Housewife	Good health.
Mrs J.	32	F	Diffuse	III.	Housewife.	Visceroptosis.
Mrs M.	30	F	Diffuse	II.	Housewife.	Good health.
Ethel P.	21	F	Diffuse	III.	Domestic	Good health.
Celia H.	27	F.	Diffuse	II.	Dispenser.	Formerly larger. No treatment.
Ann C.	19	F	Diffuse	III.	Domestic.	Good health.
Mrs H.	39	F.	Nodular	IV.	Housewife.	Frequent pregn- ancies but en- largement present before that.
Jessie C.	17	F.	Diffuse	III.	Domestic.	Good health.
Mrs R.	48	F.	Nodular	IV.	Housewife.	Nephritis 7 years ago.
Marg ^t R.	23	F.	Nodular	IV.	Domestic.	Daughter of above.
Mrs H.	30	F.	Diffuse	III.	Housewife.	Pulm. Tuberc.
Fred C.	17	M.	Diffuse	II.	Apprentice Fitter	Healthy.
Alice Y.	20	F.	Diffuse	IV.	Domestic.	Healthy.
Jane S.	22	F.	Diffuse	III.	Dressmaker.	Tuber. Glands neck in childhood.
Annie J.	24	F.	Diffuse	III.	Domestic.	Previous Health Good.

This table, small as it is, brings out one or two points. Females seem to be much more affected than males (or is it because they complain more), and it is interesting to notice that the males in the table are all tall for their years. Another interesting point is the frequent absence of a history of previous illnesses, which while it may not be absolutely correct may I think be taken as excluding conditions where the life has been in danger and where the patient has been isolated in hospital. This is interesting in view of the fact that the function of assisting in the defensive action of the organism against bacterial toxins has been claimed for the thyroid although not proved. (De Quervain Goitre, p. 14, McCarrison p.21). Another point is the comparative rarity of obviously nodular goitres, although as De Quervain points out an apparently diffuse goitre may contain small sized nodules (Goitre p.35). It will also be noted that the majority of the cases are quite young (between 15 and 25).

Considering now the clinical picture in greater detail, the patient's complaint is usually not of the goitre but of a "run down" feeling noticed more in the early part of the day. The hands and feet are "always cold" and these patients suffer very frequently from chilblains. The nails are often easily blanched by light pressure on the end of the finger, a point which/

which is regarded by Hare (Symptoms in the Diagnosis of Disease) as a sign of a deficient circulation. The skin presents a peculiar appearance, being dry and often scaly and of a peculiar "waxy" pallor. Such patients sweat very little, if at all. The hair is frequently thin and Hertoghe's "eyebrow sign" is often present. Constipation is usually regarded as a characteristic feature of myxoedema (Falta, McCarrison) but if the patients are to be believed it is by no means a constant feature. Menstrual disturbances are frequent in women, pain being perhaps the most constant feature. The pulse rate and blood pressure seem but little affected. It is seldom that the goitre is so large as to interfere with breathing or swallowing and the enlargement is usually diffuse and regular. Where the goitre is nodular the deficiency symptoms are more severe and the patients are usually older, from which I assume that the nodularity is due to degenerative changes, - adenomatous, cystic or fibrotic. When it occurs in the male it usually affects the rapidly growing boy.

The following cases illustrate the above description in varying degrees.

Alice Y. Age 20. First seen December 1922, when she had a large diffuse goitre. She had considerable difficulty in breathing and swallowing. The voice was husky with an occasional cough. The hands and feet were cold, the skin dry and scaly. The hair of the scalp and eyebrows was thin. She felt "sleepy all the time". She was very constipated. Menstruation was scanty and painful. Pulse 80. Blood Pressure 118 systolic, 95 diastolic. As the goitre was so large and obviously distressing her, surgical treatment was advised but refused, and the patient was so frightened that I did not see her again till March 1923 when I was called to attend her for bronchitis. At this time however the goitre had disappeared to a great extent although the gland could still be easily palpated. She was more alert and the skin had a more normal appearance. Constipation and dysmenorrhoea were still present. She admitted having rubbed her neck with "goose oil" but denied having done or having had done anything else in the way of treatment.

Annie C. Age 21. Complained of feeling "run down". A diffuse goitre (Class IV) was present. Skin was dry and cold. Pulse 84. Blood Pressure 124-100. Nails blanched easily. Hertoghe's sign was present. The hair of the scalp did not seem thin. She suffers from chilblains. Constipation was present. Menstruation was scanty/

scanty and painful. Treatment. 2 gr. of thyroid extract were given twice a day. Considerable improvement resulted, the skin became more moist, the thyroid began to diminish in size and menstruation became less painful. After a month of the above treatment the thyroid extract was discontinued and sodium sulphocarbolate administered (5 gr. thrice daily). The thyroid diminution was progressive and when last seen the goitre was "Class II" in size.

Annie O. Age 15. A fairly tall slender girl so that the goitre though not very large formed a distinct prominence in the neck. She had a dry scaly skin and sweated little. Hair of scalp and eyebrows was thin. Bowels were regular. Previous health was good. Pulse 72. Blood pressure 116 - 95. Menorrhagia with premenstrual dysmenorrhoea was present. 5 gr. of Potassium Iodide with 3_m Tinct. Iodi. were given at first thrice daily for three weeks without any apparent improvement. Thyroid extract was next given (1 gr. thrice daily at first, increasing to 2 gr.) This produced a definite diminution in the size of the gland, which in six weeks time from the commencement of thyroid treatment formed no obvious swelling in the neck although it could still be palpated. Menstruation was less and more painless. The skin became more moist. Treatment was discontinued for a month but the improvement seemed to have remained and more hair seemed to be growing in.

John N. Age 16. Shop assistant. A very tall thin boy with a large diffuse goitre. The hair and eyebrows were thin; the skin was cold and dry. The bowels were regular. Pulse 68. Blood pressure 124 - 100. Always has been quite healthy except for measles as a child. Circumference of neck round 7th Cervical spine and most prominent swelling $15\frac{3}{4}$ inches. Potassium Iodide was given at first (5 gr. thrice daily) but no improvement resulted. He was then told to apply the Unguentum Iodi (B.P.) in addition. Diminution in the size of the gland followed. Commencement of Iodine Ointment treatment (8.10.23) circumference of neck $15\frac{3}{4}$, 18.10.23 $15\frac{1}{2}$, 1.11.23 $15\frac{1}{4}$, after which the diminution became slower.

I may here remark that I do not attach much importance to the circumference of the neck, as it is difficult to make accurate measurements, and difficult to take the same measurement each time. The measurement was taken from the 7th Cervical Spine round the most prominent part of the swelling. Unless the difference in measurements is fairly well marked (e.g. $\frac{1}{4}$ inch) as it happens to be in the above case, I do not think one would be justified in assuming either increase or diminution in size.

Richard R. Age 19. Tall thin youth (5 ft 11 in.) He had a large diffuse goitre, a dry cold skin, thin hair on the scalp and eyebrows. Bowels were regular. The/

The voice was hoarse. He had difficulty in swallowing and in getting his breath. Pulse 76, regular. Potassium Iodide (5 gr. tds.) and Tinct. Iodi. (m 3 tds.) were given without effect for 6 weeks after which he ceased to attend. He returned a few months later in much the same condition. This time thyroid extract was given (1 gr. tds.). Breathing and swallowing became easier although there did not seem to be any diminution in the goitre. He again sought treatment elsewhere and did not return to me.

William M. Age 12. A well developed boy with a large diffuse goitre. Circumference of neck is $12\frac{1}{4}$ inches. The skin is cold and dry, the eyebrows and scalp thin. Bowels are regular. He seldom sweats, suffers from chilblains in cold weather and has considerable dyspnoea and dysphagia. The swelling of the neck has been noticed for some years. He had Adenoids at 4. Otherwise he has been healthy.

Potassium Iodide and Tinct. Iodi (5 gr. $3m$) produced no effect. When combined with Salol (5 gr. thrice daily) a gradual diminution was noticed:

6.10.23	$12\frac{1}{4}$ inches.	20.10.23	12 inches.	1.11.23
	$11\frac{3}{4}$ inches.			

This diminution was accompanied by relief of the dyspnoea and dysphagia.

Herbert P. Age 13. A well grown boy with a large diffuse goitre and a dry cold skin, who is very sensitive to cold. His nails are readily blanched by light pressure. Bowels are regular. Hair (scalp and eyebrows) is thin. He sweats very little and is rather stupid at school. Pulse 72, regular but rather feeble, although his heart seems healthy.

Tincture of Iodine 3 m thrice daily was given without effect for a fortnight. The thyroid extract (1 gr. thrice daily) was given and the thyroid gland began to diminish in size ($12\frac{1}{4}$ in. to 12 in. in a fortnight). The thyroid was discontinued and a linseed poultice applied for an hour each night for some days, a further diminution being noted. The thyroid extract was again resumed and the gland reduced to a Class II size.

Jane S. Age 22. A dressmaker with a fair sized diffuse goitre. The skin was dry, scaly and cold. She had pains in head and shoulders. Her eyebrows were thin, the bowels regular and menstruation regular but painful. She complained of feeling weary, especially in the early part of the day. She stated she "could sleep at any time". Her nails were easily blanched. Pulse 68, regular. Blood Pressure 130 - 112.

Thyroid extract (gr. 1 thrice daily) reduced the swelling considerably. The skin became moist and the menstrual function easier.

Annie J. Age 24. A medium-sized diffuse goitre. The skin was pale, dry and scaly, with little sweating. Her eyebrows were thin and she was constipated. Menstruation was profuse but painless. She complained of a feeling of weariness, especially in the mornings. Her nails blanched easily. Pulse 68, regular.

Liq. Trinitrini was given at first ($\text{m}2$ thrice daily) and seemed to reduce the size of the gland a little, but as the flushing, light-headedness and faintness proved trying to the patient it was discontinued and the patient was put on a mixture containing chiefly Liq. Ferri. Perchlor $\text{m}V$, Liq. Hydrarg. Perchlor. $\text{m}XXX$ in the decoction of Aloes. Under this, her sense of well being increased and the gland gradually went down in size.

Annie A. Age 19. A tall well built girl, complaining of a feeling of weariness, weakness and drowsiness. A large diffuse goitre is present. The skin is dry, cold and scaly. She suffers much from chilblains in the winter time. The eyebrows are thin. She suffers from headaches and pains in shoulders and arms. Pulse 72, regular. Bowels are regular. Menstruation is regular but painful.

Liquor Trinitrini 3 m thrice daily was given. The patient's sense of well being increased and she regained some of her energy, only she began to feel faint./

faint. Nevertheless the treatment was continued and the gland reduced in size (26.6.24 circ. of neck $13\frac{1}{2}$ in. 10.6.24 $13\frac{1}{4}$), but after a little the flushing and faintness from the nitroglycerin became so marked that it was discontinued and the patient was given an iron tonic. The gland did not enlarge again.

Jessie C. Age 17. Complaining of a feeling of weakness and "feeling tired". The thyroid is enlarged, causing a diffuse fullness of the neck (circumference 43 cm.). The skin is cold and dry. The eyebrows are thin, and she sweats very little. Bowels are regular, menstruation profuse and painful. Pulse 76. She was advised to poultice the neck at night, which she did for a few nights and then discontinued as it "made her neck red", thus attracting attention to it. She was then given the perchlorides of iron and mercury (5 m and 30 m thrice daily). Her sense of well being increased, but the thyroid did not diminish in size (although it seemed to become softer). In addition to the above thyroid was administered (1 gr. thrice daily). This reduced the thyroid a little, after which she ceased to attend.

Ethel O. Age 23. School teacher. Complaining of feeling sleepy and tired. A medium sized goitre is present. The skin is dry, scaly and cold. She suffers from chilblains in cold weather. The hair is not/

not noticeably thin. She sweats very little. Pulse 68, regular. Blood pressure 128 - 104. The bowels are regular; menstruation is regular but painful and profuse. She was given the Mercury and Iron perchloride mixture, after which she felt more energetic and the menorrhagia became less. The thyroid did not alter much, but the skin became more moist.

Ethel P. Age 21. A domestic servant with a small goitre, and a dry scaly cold skin. The hair of the eyebrows and scalp was thin and the nails were easily blanched. Pulse 72, regular. She complained of nausea (but no vomiting) and a feeling of weariness. The bowels were regular; menstruation was regular and painless. She was given the perchlorides of iron and mercury. The thyroid diminished a little in size and the general condition improved. The nausea disappeared.

Mrs J. Age 32. Complaining of dyspepsia, menorrhagia and dysmenorrhoea. Thyroid enlarged, forming a diffuse swelling in the neck. Eyebrows thin, skin dry and scaly. Marked visceroptosis. The dyspepsia was treated and calcium chloride (7 gr. thrice daily) was given for the menstrual condition. After the administration of the calcium however the thyroid swelled up still more. On withdrawal the gland subsided again to what it was before. Thyroid gr. 1 thrice daily was then given, this reduced the gland to the Class II stage.

Mrs S. Age 30. Complained of a sense of weariness, especially in the earlier part of the day. A small goitre was present. The skin was dry, thick and scaly. There was little sweating. Constipation was present. Hair (eyebrows and scalp) was thin. Menorrhagia was present. The perchlorides of iron and mercury were given with the result that the enlargement subsided to the Class I stage and the patient's sense of well-being was restored.

Mrs H. Age 39. Had a very large nodular goitre, the enlargement being mostly in the left lobe although the whole gland was affected. The skin was dry, scaly and thick; the hair was thin. She felt tired and lethargic. She was constipated. She had had eleven children in 12 years, the five survivors being apparently healthy. Pulse 68. Blood pressure 156 - 130. Thyroid extract gave a more normal appearance to the skin and restored the sense of well-being to some extent, but the goitre underwent no change.

Mrs R. Age 49. A marked goitre was present with irregular enlargement of isthmus, although the whole gland was enlarged. The hair and eyebrows were thin. The skin was dry and felt thick. Pulse 72. Radials were thickened. Constipation was present. She felt tired and lethargic. Heart was slightly enlarged but the sounds were all closed.

Thyroid extract relieved the symptoms here again, but had no effect on the size of the goitre.

These cases illustrate the condition and show the results of the various methods of treatment employed, or rather the immediate results. I may point out here that the boys in whom I have found this condition are all well grown, usually thin and not the "short stout phlegmatic individuals with tendency to corpulence" which are described by Bauer as representing a "hypothyreotic constitution", (Konstitutionelle Disposition zu Innern. Krankheiten, p.89).

In considering the effects of treatment it seems well to bear in mind the first case where the goitre disappeared without any medical treatment. At the same time, although the number of cases is small, it is sufficiently large to exclude coincidence in every case.

Iodine and Iodide-containing substances have been used in the treatment of goitre in districts where it is endemic, for a very long time, even the Indians of North America using seaweed ashes as a remedy (Franklin Journal of a Voyage to the Polar Seas). In these areas it is of undoubted service, yet the results obtained by me were negative, probably because of a different cause of the condition. According to McCarrison (the Thyroid gland, p.108) if it produces no effect in a month it is not likely to produce any, and in my cases it was usually administered for that period at least.

The fact that the iodine ointment seemed to have more effect than the iodine-containing mixtures, suggested that the improvement might be due to the application of the ointment increasing the vascularity of the gland. In some cases therefore treatment was discontinued for a short time and poultices applied to the neck for one or two hours each day. This treatment was not at all popular with the patients but in the few cases where it was applied improvement seemed to result.

Bearing in mind the extensive blood supply of the thyroid, it seemed possible to produce a certain amount of hyperaemia by the use of vaso-dilators such as nitroglycerin. Experience proved this not to be a suitable drug as its general effect on the patient was nearly as disturbing as that of the goitre, but it seemed to produce some effect on the size of the goitre.

The administration of thyroid proved the most convenient and reliable measure, but whether it acted through its vaso-dilator action or by remedying a thyroid deficiency I cannot say. It seems however to start a curative process because the cases treated by it did not return to their original condition when it was discontinued.

I have not used intestinal antiseptics such as thymol, salol, sod. sulpho-carbolate to any great extent and when I have done so it has usually been in conjunction with other methods, but some cases appear to benefit by them. Chalmers Watson (*British Medical Journal*/

Journal, June 1923, p.1071) denies that they have any antiseptic action. I have been unable to find any account of any action after absorption which they may have. The perchlorides of iron and mercury have been recommended as an efficient intestinal antiseptic (British Med. Journal. Feb. 16th 1924, p.270, Stacey Wilson). They also provide a very efficient general tonic and it was hoped that by a combination of the two actions one might produce some improvement. They certainly relieved the feeling of weariness and lassitude of which these patients complain, although the action on the thyroid itself was not very marked.

Where the goitre is very irregular and nodular I do not think much can be hoped for from medical treatment beyond relieving any deficiency by thyroid administration. In such goitres one assumes that degenerative changes have taken place, and by the time a diffuse goitre has become a "lumpy" irregular nodular one, satisfactory medical treatment must of necessity be difficult.

From these observations it would appear that goitre is often accompanied by symptoms recognised as signs of thyroid deficiency.

That it affects young people mostly.

That in this district it does not respond to iodine treatment, but it does improve under thyroid treatment and measures increasing the vascularity of the gland.

That/

That intestinal antiseptics appear to have a beneficial action on the condition.

That in certain cases the condition clears up spontaneously

THYROID ENLARGEMENT

WITH SYMPTOMS OF HYPERTHYROIDISM.

The above condition is also frequently met with in this district, almost entirely in women. Most of the cases are mild but occasionally one finds an approximation to the classical picture of Graves Disease.

The thyroid enlargement in these cases is frequently not very great. The gland is usually soft and pulsation can often be felt. The patient usually complains either of a feeling of weakness, or of palpitation, or of feeling nervous. They seem to have an indefinite feeling of malaise which is frequently expressed in the phrase "my nerves are bad". The pulse is usually more rapid than one would expect, the nails are often easily blanched and the blood pressure (as taken from the brachial artery) distinctly low. Sweating is usually increased, skin eruptions sometimes occur and dermographism is occasionally found. The menstrual function is frequently disordered. Tremor is/

is present in nearly all cases and the patients sleep badly - sometimes being unable to sleep and sometimes having unpleasant and terrifying dreams. A source of toxic absorption is often present and constipation is frequently met with. Exophthalmos is not common.

I have not yet seen any cases which presented signs of deficiency at one time and of overaction at another.

Mrs H. Age 45. The thyroid was distinctly enlarged; pulsation could be readily felt. She complained of weakness, palpitation and faintness. Pulse 120. A systolic mitral murmur was present and the heart sounds seemed rather feeble. She was constipated and had occasional vomiting. The mouth was very foul, most of her teeth being decayed. There was marked tremor, and the patient was very excitable. She got little sleep. Exophthalmos was present. Menstruation was regular, profuse, painless.

She was kept in bed for about six weeks, during which time potassium bromide (10 gr. thrice daily at first, reduced to 5 later) and Tinct. Digitalis 5 *m* thrice daily were given. Under this treatment the pulse rate reduced (100) the tremor became less and she slept better. The vomiting stopped and she felt less excitable. The digitalis was discontinued and iron (Ferri. et Amm. Cit. gr. V thrice daily) was given with the bromides. She was advised to have her/

her teeth removed but did not do so. The bowels were regulated with Liquid Paraffin. She improved enough to be able to do her own work, but could not be regarded as cured.

M.G. Age 32. This patient complained of nervousness and palpitation. She stated that she had had exophthalmic goitre five years ago and had had all her teeth out for it. The thyroid gland was enlarged, diffuse and pulsating. She sweated very much, and had a marked tremor, starting easily at noises. Occasional diarrhoea was present. Palpitation was troublesome; her pulse was 128; the heart sounds closed but feeble. Her nails were easily blanched by pressure. Möbius and Von Graefe's signs were present. She had unpleasant dreams. Menstruation was regular but rather profuse.

She was given a mixture containing Liq. Hydrarg. Perchlor. m 30, Liq. Ferr. Perchlor. m 6, Calcium Chlor. gr. 5 and Pot. Bromid. gr. 5 thrice daily at first. The bromide was left out after a fortnight. At the end of three weeks she felt much better, was not so "nervous", the thyroid was smaller and had stopped pulsating. The pulse rate had fallen to 96 and the eye signs had disappeared. The improvement continued till the pulse rate fell to 80 when treatment was discontinued.

Mrs A. Age 29. Complained of feeling irritable and tired. The thyroid was enlarged and soft, and pulsation could be felt. She had some difficulty in swallowing. She also "felt hot" and sweated profusely. There was no palpitation. Pulse 100. Bowels were regular with occasional attacks of diarrhoea. Marked tremor was present but no eye symptoms; she complained of unpleasant dreams. Itchy erythematous eruptions, mostly on the arms, appeared from time to time. Menstruation was regular and painless.

Potassium Bromide was given (5 gr. thrice daily) combined with a "general tonic" (Acid Nitrohydrochlor. Dil. mX , Liq. Strychnin Hydrochlor mV) and calcium lactate tablets were given (5 gr. thrice a day). The dysphagia was relieved and the enlargement subsided a little and the patient felt better but she discontinued treatment before the swelling was reduced much.

Mrs W. Age 40. Complained of a sensation of numbness in the vertex of the head, combined with fainting attacks. She stated that she had never felt well since typhoid fever 3 years before. The thyroid was considerably enlarged and soft. Marked tremor of hands and tongue was present, the latter being fairly clean although she had had pyorrhoea alveolaris which she would not have treated. Pulse 116. She sweated profusely at times and her face flushed readily. There was no exophthalmos./

exophthalmos. Bowels were constipated. Menstruation was regular and profuse and was accompanied by pains in the back and head. Knee jerks were increased, the pupil reaction was sluggish, she had an anaesthetic palate and felt very sorry for herself.

This patient was put on Potassium Bromide, perchloride of iron and chloride of calcium and the bowels were regulated with liquid paraffin. The tremor became less and she felt better, the thyroid became harder and diminished a little in size. The pulse rate became lower and improvement was more rapid after she was persuaded to have her teeth seen to, but was not complete as she still remained excitable, easily roused to anger and flushing readily.

Ethel P. Age 21. This patient was first seen on account of a fainting attack. She had complained of feeling faint for some time back. A soft "boggy" moderate sized pulsating goitre was present, with marked tremor, but no exophthalmos. The heart was not enlarged but the pulse rate was very rapid, although regular (132). No murmurs were heard, but the sounds were very feeble. She had attacks of profuse sweating; the bowels were regular; pyorrhoea was present. Menstruation was regular but painful. She was kept in bed and had three further fainting attacks at intervals - each, curiously enough, coming on a fortnight after the/

the onset of menstruation. She was given Potassium Bromide and digitalis (Tinct. 5 m thrice daily). The pulse rate fell to 116 and the beats became stronger but on discontinuing the digitalis, the pulse rate rose again so it was resumed. About a month after the onset she complained of a sharp shooting pain in her neck which was relieved by a blister. Nothing abnormal could be made out to account for the pain. The bromides were discontinued and she was put on salol (5 gr. thrice daily) after which she improved more rapidly and in about three weeks was able to sit up without feeling faint. The salol was discontinued as was the digitalis and she was put on an iron tonic. The improvement continued and the swelling subsided although the gland could still be palpated.

Mrs P. Age 40. Complained of periodic attacks of vomiting and diarrhoea. The neck was visibly enlarged by a soft pulsating goitre. Sweating was profuse. The pulse was feeble - 132, regular. Marked tremor was present as was Von Graefe's sign. She had marked pyorrhoea alveolaris and her teeth were very much decayed. Menorrhagia and dysmonorrhoea were present. She slept badly and had unpleasant dreams.

She was given Liq. Hydrarg. perchlor. m 30, Liq. Ferr. Perchlor. m 10, Calcii Chlor. gr. 10. Potass. Bromid gr. 5 four hourly. Within a week the tremor was less, she was sleeping better and the diarrhoea and sickness/

sickness had stopped. The mixture was continued for three weeks longer and the gland was certainly reduced in size and was firmer and no longer pulsating; the pulse rate had fallen to 96, and the patient felt well enough to decide that no further treatment was required.

Alice H. Age 21. Domestic Servant. Complained of a feeling of weariness and irritability. The thyroid was enlarged and soft. Pulse 124. Blood pressure 115 systolic, 90 diastolic. Nails were easily blanched. Sweating was increased. Her teeth were good but her tonsils were enlarged. Bowels were regular. Tremor was present but no eye symptoms. Menstruation was regular but painful. She was put on the same mixture as the previous patient for a fortnight, after which the bromide was omitted. The pulse rate fell to 84 and the blood pressure rose to 125 (systolic). The tremor disappeared. Treatment was continued for a month, after which she spent a week in the country, returning to work perfectly well to all appearances.

Mrs T. Aged 35 but looking much older. Complained of excitability and insomnia. She had definite exophthalmos. The thyroid was considerably enlarged, pulsation being recognisable. Pulse 128. Heart sounds were feeble; no murmurs were present. Slight hoarseness/

hoarseness was present. Bowels were regular and she had occasional attacks of vomiting. Her mouth was very dirty. This patient continued her work in spite of advice and was given 10 gr. of Pot. Bromide thrice daily. She slept better but otherwise showed no sign of improvement. Soon becoming dissatisfied, she discontinued treatment. When next seen (about four months later) her thyroid was still enlarged but the exophthalmos had disappeared, there was no vomiting or undue sweating, the pulse rate had fallen to 72.

She said she had had no treatment beyond what I had given.

Hilda H. Age 18. Complained of feeling tired and irritable. The thyroid was slightly enlarged, soft and pulsating with a bruit heard on auscultation over it. Her teeth were bad; she was very constipated. Her pulse rate was 96. Blood pressure (systolic) 120, (diastolic) 100. Her nails were readily blanched. She did not sweat much. She complained of sleeping badly with terrifying dreams. Menstruation was regular but painful. Tremor was marked.

She was given the perchlorides of iron and mercury with potassium bromide and calcium chloride. She slept better but seemed little altered otherwise. The bowels were regulated with liquid paraffin. She was then placed on the following mixture: Tinct. Digitalis η 7. Neutral Sodium Phosphate gr. 10. Sod. Bromide gr. 10. This produced a slight improvement in the /

the general condition, but otherwise there was little change.

Finally she was given the following mixture thrice daily: Liq. Arsenicalis ℥3. Ferr. et Ammon. Cit. gr. 6. Emuls. Chloroform ℥5 in water. This seemed to produce more improvement and after a few weeks she returned to work.

Annie H. Age 22. A worker in a printing works, complained of a sense of weariness, sleeplessness and unpleasant dreams. The thyroid formed a visible swelling in neck; pulsation was recognisable. Her pulse was 96; blood pressure (systolic) 128, (diastolic) 102. Marked tremor was present. She was constipated, and her teeth were bad. Menstruation was regular and not painful. She complained of increased sweating. She was given the iron, mercury, calcium and bromide mixture. Improvement was marked and continued after the mixture was stopped. This patient's two sisters (18 and 16) presented similar symptoms, only in the elder one the thyroid was not so enlarged and in the younger it was scarcely palpable. I was not called upon to treat them.

These patients all presented the clinical picture of Graves disease in a greater or less degree (principally less). They were all women and in all cases women between the ages of puberty and the menopause. In a number of cases pyorrhoea alveolaris was present and in one case the condition recurred after removal of the teeth. The response to treatment was varied, and in view of the fact that one case apparently recovered without treatment, indefinite. As has been seen the line I adopted was to reduce the excitability and to procure sleep for the patient with bromides, to improve the general condition by tonics and to endeavour to procure more efficient cardiac action by digitalis. Calcium is supposed to have a specific action on the thyroid, although it was first given by Muller and Saxl because it was thought to have a dampening influence on irritation of the nervous system (Falta, p.110). Poulsson describes calcium as a remote astringent, one of its actions being to diminish vascular permeability. It seems to me that in these cases such an action would be brought to bear upon the thyroid with advantage.

While such treatment cannot be regarded as very satisfactory one must remember that while two satisfactory methods of treatment are known (operation and X-rays), these methods cannot always be applied.

Falta/

Falta (Endocrine diseases p.108) says "mild cases among the better situated classes should not be recommended operation, nor should the chronic formes frustes ", and such are the cases here described. Such treatment as I applied seemed reasonable and certainly did no harm, and I think that it accelerated the return to ordinary health which I think would have taken place in many cases in the ordinary course of events without any treatment.

Several authorities (Falta, Kocher, Ochsner, De Quervain, McCarrison) hold that digitalis should only be given when cardiac failure is present. According to Poulsson, however, small doses provide a more efficient circulation by slowing the pulse rate and increasing the force of the beat. Such was my reason for giving it in small doses and for short periods when the pulse seemed to be so rapid that it caused discomfort. Where it was used it seemed to produce a satisfactory result.

My own view is that these cases are not cases of Graves disease according to the usual definition of that disorder, but are the result of a temporary hyperthyroidism which seems to be connected in some way with the menstrual function. I think that in cases of this type spontaneous recovery takes place sooner or later, the time required being longer if the patient's general condition is poor or if circumstances are unfavourable. Most of the discomfort appears to arise from the disturbances of sleep, and improvement becomes more rapid when the patients can sleep well.

CASES PRESENTING SYMPTOMS RESEMBLING THOSE OF
ALTERED THYROID FUNCTION WITHOUT THYROID ENLARGEMENT.

I wish now to draw attention to a few cases which although no goitre was present, presented symptoms reminding one of the symptoms of that condition.

Bella S. Age 10. Complained of repeated fainting attacks in school and frequent attacks of dizziness although otherwise she seemed quite healthy. She is an intelligent well-grown child. Adenoids, tonsils and appendix had been removed on previous occasions. Examination revealed little to explain the condition. The heart sounds were closed and well heard; pulse was 96. Blood pressure 105 systolic and 82 diastolic. She sweats profusely in warm weather but her hands and feet usually feel cold. She suffers from chilblains in winter. Her nails are readily blanched by light pressure. Dermographism is present, the wheals appearing in about 2 minutes and lasting for about 10. The appetite is good, the bowels regular, no apparent gastro intestinal disturbance being present.

Herbert C. Age 9. Stoutish boy, fairly well grown, complaining of itchy erythematous eruption on arms and legs. There was a history of having eaten some/

some pork some hours earlier. He had no nausea, vomiting or diarrhoea. The patches faded rapidly, reappearing in other parts, some only appearing for a few minutes. He is said to be a "nervous delicate child" and is said to talk in his sleep. He is very sensitive to cold weather, frequently becoming faint in the winter time. Temperature 98.2. Pulse 84, regular but rather feeble. The heart sounds are well-heard and no murmurs are present. The hands and feet are cold; the nails are readily blanched. He does not sweat much at any time and suffers from chilblains in the cold weather. The eruption cleared off in a few days and the boy seemed quite well after that.

Ethel B. Age 21. Typist. Complained of palpitation and shortness of breath, which she said was always worse in hot weather. She is subject to erythematous skin eruptions. The heart appears normal in size, no murmurs are present and the sounds are all closed. Pulse 127. Blood pressure 112 - 90. She has some nausea in mornings but otherwise the digestion is good. Bowels are regular. She flushes readily and for trifling things. Menstruation is regular and painless. Urine normal. Thyroid is not enlarged, corresponding to the Class I of the Swiss Goitre Commission.

Elsie W. Aged 18. Complained of a punctate erythematous rash which quickly faded. Sore throat present but no vomiting. She was treated as a case of scarlet fever. The eruption faded quickly and left no trace. Her face is rather pale and "full". The eyebrows are thin and her hair falls out readily. Her hands and feet are cold and she is subject to chilblains in winter time. She sweats very little, the skin being always "dry". No thyroid enlargement is present, "cushioning" being felt but no definite gland. Pulse 72. The heart is apparently normal and there are no abnormalities in the urine.

Florence F. Age 17. Complaining of frontal headaches with nausea in the morning, which wears off later in the day. She is extremely sensitive to cold and suffers very much from chilblains. She sweats profusely in the hot weather. The skin is rather dry and pale, the hair and eyebrows thin. She faints if she has to remain standing for any time. She sleeps well and is not readily excitable. The heart is apparently normal. Pulse 76: blood pressure 124 - 100. The nails are easily blanched. Premenstrual dysmenorrhoea is present; menstruation is regular and of moderate amount. The thyroid is not palpable except at the menstrual periods. Urine is normal. She has some astigmatism which is corrected by glasses. This patient/

patient was treated with thyroid extract without any apparent effect, which I think is an indication that it was not a case of myxoedema.

None of these cases showed thyroid enlargement but the first three present symptoms recalling those of hyperthyroidism and the other two symptoms recalling thyroid deficiency. It is a little difficult to see how one should regard these cases, perhaps the most satisfactory way being to consider them as cases where the cardio-vascular system responds to ordinary stimuli in an abnormal manner, the tendency in the one group being towards vaso-dilatation and in the other towards vaso-constriction.

Bauer (p.92) quotes Kocher as making the following statement. "The Basedow-Constitution represents in clearest form what was formerly described as the sanguine temperament. The emotional, readily-excitabile always-restless type of individual in the face of whom the blood rushes on the slightest occasion, the eyes shine, sweat is poured out, and trembling appears, in whom trifling matters call forth strong psychical reactions, has the tendency to Basedow's disease and the more cases I see the more evident it becomes to me that certain nations and races produce more cases of the disease than others".

His description corresponds on the whole with the first cases described in this section and there seems to be some ground for considering Graves disease as developing/

developing most readily where there is a "hypersensitive vascular system". At the same time one must remember that the vascular system is under the joint control of the vegetative nervous system and several if not all of the ductless glands, so that such a state might conceivably arise from a variety of sources.

Considering the next two cases, if they were goitrous they would certainly be classed as goitres showing signs of thyroid deficiency. As they are not goitrous should we regard them as cases of mild myxoedema? I may point out here that the symptoms which are present in the goitres presenting deficiency symptoms can all be explained by a deficiency peripheral circulation, and it is quite as likely that the cause of the deficient circulation is the cause of the goitre as that the goitre is the cause of the deficient circulation. Viewed in that light, it seems that we have here a condition in which a goitre might be expected to develop later.

SOME GENERAL OBSERVATIONS UPON GOITRE.

While one cannot draw definite conclusions from such a small number of cases some interesting points are raised. The first point which arises is - are we dealing with a variety of endemic goitre? My own opinion is that such is not the case.

McCarrison (p. 87) states that the proper index of endemicity includes consideration of (1) the number of cretin children, deaf mutes and idiots (2) the number of susceptible new comers acquiring the disease in a fixed time (3) the proportion of men and women affected and (4) the size and character of individual goitres. He further observes that where the endemicity is high the thyroid swelling is not great, that boys seem most susceptible at 9, girls at 10 and again at puberty, the tendency after that age diminishing for males but increasing for females.

Saint Lager (p.8) drew the following distinction between endemic and sporadic goitre.

Endemic.

Sometimes accompanied by cretinism or imbecility.

Disappears or diminishes when one leaves the district where it is endemic.

Often accompanied by dental caries, stammering and deafness.

Cured by iodine when not too far advanced.

Sporadic.

No concomitant idiocy.

Unaltered by change of environment.

Only produces interference with respiration and circulation.

Many cases, even recent ones, unresponsive to iodine.

It would appear that in this district, the number of cretins and deaf mutes is small, that women are more affected than men, that the goitres on the whole are not very large, seldom producing dysphagia or dyspnoea, and although very often very obvious, rarely producing disfigurement. They do not respond to treatment by iodine and iodides, and domestic animals do not seem to develop the condition.

Further, one of my cases apparently underwent a spontaneous cure which does not happen with endemic goitre unless the patient leaves the district. In view of these facts, it appears that the goitres here differ considerably in some respects from the condition as it occurs where it is definitely endemic.

These cases resemble more the cases described by McCarrison as "simple toxaemic goitre", although here again there are differences. He states that these cases develop chiefly at the onset of menstruation in chlorotic and constipated girls, and are due almost invariably to intestinal toxaemia. For the last part of the statement he produces no evidence, and while most of my cases were girls, some were boys and others were more advanced in years.

It is an interesting point that most of the cases of goitre with deficiency symptoms develop at the time of puberty, sometimes a little before and sometimes a little after. The onset of puberty occurs at a time when/

when growth is rapid and when some of the most important endocrine glands reach their full development, while others undergo a kind of involution. The endocrine glands of whose function we have most knowledge (thyroid, adrenals, pituitary) all exert some influence on the circulatory system and it seems possible that the direct cause of these cases may be a vascular change. Falta states that the circulatory symptoms dominate the clinical picture of Graves disease, and as myxoedema is usually ascribed to arterio-sclerotic changes in the thyroid and as many of its accompanying symptoms are due more to arterio-sclerosis than thyroid deficiency, the circulation again dominates the clinical picture only less obviously.

In this connection the action of calcium is of interest. Calcium appears to raise the "threshold of absorption" of the thyroid and to increase the amount of colloid. Poulsson describes calcium as a "remote astringent" and says that one of its actions is to diminish vascular permeability. It seems possible that at puberty, when growth is rapid, and when the endocrine glands develop rapidly, the "endocrine balance" might be readily upset to a degree sufficient to produce circulatory alterations, which would result either in increased or diminished permeability. There is supposed to be an interglandular mechanism regulating the absorption-secretion ratio of the thyroid

(De/

(De Quervain, p.13) and presumably of the other endocrine glands as well. This mechanism would be more likely to suffer derangement at such times as puberty, menstruation, pregnancy and menopause than at other times, because at these periods there appears to be more strain on the endocrine glands. Enlargement of the thyroid at these times (excepting menopause) is physiological, although the state of the other endocrine glands is not accurately known. Assuming that one has a deficient circulation one might reasonably expect enlargement of the thyroid first from retained secretory products and secondarily from hyperplasia in response to increased demand for thyroid secretion, although as long as the circulation remained deficient there would still tend to be a thyroid deficiency.

The points that seem to support such a theory are these. In the cases presenting deficiency symptoms which I have quoted, where the enlargement was recent, the patient was either a boy or a young woman, and the boys were usually abnormally well grown and the women had disordered menstruation. In a certain number of cases measures calculated either to induce hyperaemia of the thyroid or an increased blood supply to the peripheral vessels brought about an improvement in the condition of the patient. While iodides are regarded as vaso-dilators (according to Poulsson) they are so only in virtue of their action on the thyroid, while thyroid extract is in itself a vaso-dilator, so that the/

the poor results from the use of iodides are also explained.

The spontaneous disappearance of these goitres is explicable on the views just set out, by the assumption of the restoration of a more normal vascular state either by improved general condition or by restoration of the endocrine balance, but it is difficult to explain the subsidence of the thyroid swelling on the theory of an intestinal toxæmia, or on a hydrotelluric theory, in which the causal factors would be always present. The view just expressed, however, while it assumes that a disturbed circulation is the cause of the thyroid enlargement does not settle the ultimate cause of the condition, for the disturbed circulation might arise from a multitude of causes.

With regard to the cases presenting symptoms of hyperthyroidism, it may be that in them the circulation is "too efficient", stimulating the thyroid to excessive activity. Where the cardiac rate is rapid and the peripheral vessels dilated one would naturally expect increased absorption from such a gland as the thyroid, and thyroid secretion being vaso-dilator in action, the setting up of a vicious circle.

Although the end result of this would be a poor circulation, this would be least felt in a very vascular organ such as the thyroid itself. The nervous system however in these cases seems to play a more obvious part than in those of the other group, such cases being/

being often of an excitable and emotional disposition. Graves disease is well-known to be frequently a consequence of emotional stress and it would be interesting to know if the cases of goitre extracted by Saint Lager from the lives of the saints were not of this type.

There is another aspect to the question of endemicity, however. Goitre is and has been for a long time endemic in Derbyshire. Saint Lager also states that it prevailed in the hills round Oldham, in the hilly parts of Staffordshire and in certain parts of Cheshire. At the time when his monograph was written the town of Crewe hardly existed and the population at first consisted almost entirely of railway workers, most of whom came from other parts of the country. There was then a considerable mingling with the people from the surrounding districts, so that a factor in the occurrence of goitre here to-day may be the effect of a "goitrous ancestry".

My own opinion, which I have here tried to set forth, is that goitre (in this district at any rate) is due to faulty correlation between the nervous system and the various endocrine glands at the time of puberty, or at menstruation, the immediate cause being the consequently disordered circulation. According as the general effect is vaso-constructor or vaso-dilator, so will the resulting clinical picture show features of thyroid inadequacy or thyroid overaction. This theory also helps to explain those cases described by various authorities as "goitre heart" (Falta p.166).

The question now arises, what view is one to take of the cases in the first group which simply present an enlarged thyroid without any symptoms?

In the first group the thyroid enlargement is not great and scarcely visible. The patients are all young. It would appear then that either we are dealing with cases in which symptoms of deficiency or overaction have not developed, in other words, the goitre has preceded the circulatory symptoms, or else that the circulatory symptoms have been present and have cleared up. In view of the fact that when deficiency goitres improve, the circulatory symptoms do pass off before the goitre subsides, the latter view is not improbable, although the former view is not dismissed. At the same time it is doubtful if these cases should be regarded as pathological. They occur at or near a time when enlargement is physiological, they do no harm by their size and there is nothing to suggest disordered function of the gland. It may be that there is some deficiency in the other endocrine glands for which a larger thyroid than normal is required to maintain the correct "endocrine balance".

C O N C L U S I O N S .

I think I am justified in drawing the following conclusions from these observations.

- (1) Goitre in the district of Crewe differs from the Endemic Goitre found in other parts.
- (2) So far from being unaccompanied by symptoms other than thyroid enlargement, these cases usually have symptoms suggesting increased or diminished thyroid function.
- (3) Both types affect women more than men.
- (4) Deficiency goitres occur most frequently at or about puberty, and there is some reason for regarding circulatory inefficiency as an important factor.
- (5) Treatment directed towards the improvement of the general condition and circulation will be found satisfactory on the whole. There is reason to believe that such treatment acts by increasing the tendency to spontaneous recovery which appears to be present in these cases.
- (6) Where the goitre is accompanied by signs of thyroid deficiency, the administration of thyroid extract is beneficial.

