The thyroid gland, and its relation to myxoedema and its treatment
The wonderful discovery made by Dr. G. R. Murray of Newcastle in 1891, that myxoedema is a disease, which up to that time had been considered not to be, a scarcely to be amenable to treatment, could be treated and treated successfully by hypodermic injections of an extract of the healthy thyroid gland, marks one of the greatest advances made in medicine during this century. Dr. Murray was led to try the effect of these injections not by mere chance, but by a conviction arrived at from a careful study of the views of various authorities, who had made the subject of myxoedema a special study, that the disease is due to the absence from the system of a product normally secreted by the healthy thyroid gland. She noted to be able by injecting the juice of the thyroid to supply artificially.
Artificially a substance which the
normal thyroid gland secretes, which
is necessary for the well-being of
the body, but which is absent
in a case of myxoedema.

I propose in this paper to dis-
cuss the facts, which led up to
the conclusions upon which Dr. Murray
acted, to discuss the effects of
the treatment of myxoedema by the
administration, hypogastrically and
otherwise, of the active products of
the thyroid gland.

Many theories as to the
function of the thyroid have been
prophesied. I shall in the first
place merely mention the theories
of some of the older writers without
commenting upon them. The
thyroid has been supposed to
be without function in exha-
usterine life (Prochaska).
It has
been supposed to be related to the
several function of the voice (Merkel,
Martin).

16
to be an organ of sleep (tumeins), to act mechanically as an elastic cushion for the protection of the brain (Drumastik). Wharton suggested that its function was to give beauty to the female neck. It has been improved to be a regulator of the cerebral circulation (Sempere, Listerism and frigyn). With Simms originated the idea that it might secrete something necessary to the proper nutrition of the brain.

The first experimental research into the function of the thyroidea gland was made by Sir Astley Cooper as far back as the year 1836. He removed the thyroidea glands from two healthy dogs, 10 weeks old. The only effect that he observed to follow was that the dogs became dull and obviuous ill. When the wound had healed (on the 13th day after operation) he killed the dogs and found that the glands had been entirely removed. Not much can be learned from these experiments.
experiments of Cooker, as the drop were allowed to live on 18 days
whether the illness and weakness of
the drop was due to the operation
or to the loss of the plasma, as they
does not appear.

9 From Rahn in the year
1840 published a paper in which
he described two experiments made
by him, one on a dog, the other
on a foal. He removed the
thyroid from both animals and
observed no ill consequences to
follow. He however found that
dogs from which he removed the
thyroid gland died. He concluded from his
experiments that the thyroid gland
was without influence for health
in life as far as animals were
concerned, and that its function
was entirely and quickly mistaken
by some other organ, and that
further the evil results which
followed
followed the removal of the python's gland, were due not to the loss of the gland but to the severity of the operation.

In the following year, 1841, experiment was made to the effects of removal of the thyroid gland of dogs and cats. His experiments were conducted chiefly with the idea of discovering whether the blood suffered any change in animals whose spleen, or thyroid, or both organs had been excised. His first experiment commenced in removing a dog's spleen and after recovery from that operation he removed its thyroid. The result of this experiment was that the dog died five days after excision of its thyroid showing symptoms of tetany (Krämpfen) before death. In a second experiment, he removed a dog's thyroid and seven weeks afterwards its spleen. This dog remained healthy till its spleen was removed but died from tetany brought on by the operation for removal of its.
of its spleen. He next removed the spleen and thymus simultaneously from four dogs, but all died from the severity of the operation from another dog four weeks after removal of the spleen we removed the thymus. This animal recovered and in a month had added a pound to its weight. In a subsequent paper he states that this dog remained alive for six years. He also remarks that although this dog was the longest operated on it had the smallest thymus. He concludes which Barre OTown draw from his operation is that dogs without spleen or thymus may live on quite normally, and that in particular removal of the thymus is not followed by any change in the blood, or in the blood-supply to the brain or alteration in the voice.

12 Finnegan and Simon extracted the thymus from an ocelot, with negative
negative result, the cat remained healthy up to the end.

13. Shibas in the year 1859, while making research in regard to the formation of sugar in the liver, made a series of experiments in which he removed the thyroidea gland. For the first few days after operation the animals showed no abnormal symptoms. A number of dogs, however, after this apparently insignificant operation died in a peculiar manner. They slept a great deal, became incoherent in their joint and evidently uneasy; they died very quietly. The post-mortem examination threw no light on the cause of death. In no case during life was there any indication of disturbed cerebral circulation, or any alteration in the voice.

In February 1884 Shibas published another paper on the effects of experimental removal of the thyroidea gland, and this occasion the experiments were undertaken primarily with the view of establishing the effects
the effects of removal of the gland he corroborated by general results of his previous experiments. After first demonstrating that the mere excision of the gland, and the division of the vessels and nerves in its neighbourhood, did not produce the symptoms he had observed, he removed the entire gland from a number of cats and dogs. All the animals now experimented on, 60 in all, died within 28 days, usually between the sixth and ninth days. The symptoms observed during life were as follows: The animals became sleepy and slow in their movements; they raised themselves up to eat, and death followed sooner or later on development of these symptoms. In most cases, fibrillar twitchings of the muscles were observed which began in the extremities and frequently ended in violent
shams of the whole body. Schiff forbears to draw any definite conclusion from his experiments, still he leans to the hypothesis that the thyroid gland is in definite relation to the mechanism of the central nervous system.

In a later paper published in August of the same year he showed that rats and rabbits suffered on removal of the thyroid without apparent suffering any bad effects. The gland accordingly cannot have the same importance in rodents as in carnivora.

The next experiment was 16. Leman who brought out very similar results as Schiff. He operated in dogs, I removed the spleen and the thyroid, now one now to the other organ first. I showed that while animals generally live for a high period after the excision of the spleen well, they soon expire after the thyroid also had been removed. The removal of the thyroid...
of the thyroid alone altered the health of the animals in a very striking manner. A few weeks after operation the animals became sleepy, instead of the usual alertness. Reduced almost every attempt to feed them. Of four dogs whose thyroids alone had been excised, one died from the operation, the second in 12 weeks, the third in 16th weeks, and the fourth operated on in 1882 was alive in 1884. A cat, whose thyroid was removed, died in 18th weeks.

Tessar concludes from his experiments that the spleen and thyroid have the same function, with regard to blood formation, and that the thyroid can replace the spleen, but that it has in addition a more important function, namely, the regulation of the cerebral circulation, its absence causing anaemia of the brain. This conclusion is at variance...
with other symptoms of the cerebral regulatory theory for the role that the function of the thyroid is to prevent hypervolemia of the brain.

In this same year 1884, Colzi contributed a paper in which he showed that while rabbits survived the removal of the thyroid, the experimental procedure caused death within 8 days. Before death, his dogs showed similar symptoms to those described by Serres. The removal of one lobe of the gland had no effect on the dog's health, but the subsequent removal of the second lobe brought about the symptoms. If only one quarter of the gland were left behind, fibrillar twitches were observed but their disappearance after an interval. Colzi found that the evil symptoms could be made to disappear for a time by transfusing the blood of a healthy dog. This conclusion...
conclusion as to the function of the ovary. Indeed, it is clear that it consists in producing certain substances from the blood which have a deleterious effect on the nervous system. That the removal of the gland is followed by an accumulation of these deleterious products and an auto-infection analogous to ulceration follows.

Wayne found that all the animals from which the removed testicular gland die in one to four days after exhibiting symptoms similar to those described by spat. When one half of the gland was removed, the animal's health was not affected, but death soon followed the removal of the other lobe. Wayne's conclusion is that the gland has a relation to the nutrition of the nervous system, that after removal of a part of the gland the remaining part takes on the function
function of that part which has been removed.

19. Sanguineous and Canalis Removed

10. Hypoic plans from seven days to death followed in every case within
16 days. The symptoms which followed the operation were difficult
swallowing, weakness in profession
a barely breathing. Twitching of the
muscles were observed in most
cases, in one case there was
atonia accompanied with
ochistosomes. The intensity of the
symptoms varies in different
cases but in all the cases there
was a great resemblance. After
the symptoms first appeared it was
with difficulty that the stops could
be induced to take food. The
most common postmaiden changes
were anemia v at times edema
of the brain. These observers conclude
that the removal of the thyroid
gland is stopped by fatal results, and that the
function of the glands is related in some way to the mechanism of the central nervous system.

In 1886, 20 he published a report of a series of operations he had made during the previous year. He excised the thyroids of nine dogs and none except two died within a month. The average duration of life after operation he found to be 10 days. That the symptoms during life were very similar to those described by 5 others.

21 Prof. Richard Horsley in the Brown Lecture delivered at 23, in 1884 described a series of investigations he had made during that year into the subject of excision of the thyroid glands. The experiments which he then described were performed on monkeys. He found that the monkeys survived the operation for removal of the thyroid gland about a 14 days. The schemes noticed by
Restrictive 41 + 5-6 days. The following is a description of the symptoms. For the first few days after operation, the animals appeared to be perfectly well, then there was noticed a slight fibrillar twitching of the hands, feet, muscles, and lower jaw. This afterwards became a constant tremor which was ultimately replaced by powerful clonic seizures. The animal becomes pale, emaciated, languid, paralytic, and imbecile, and death follows in from five to seven weeks. The first symptoms are entirely nervous and are summed up as follows:

Motor: tremors, clonic seizure, contracture, nystagmus, weakness, analgesic
Sensory: parasthesia, anaesthesia
Reflexes: gradually diminished
Mental operation: normal at first, soon diminished in activity, then follow apathy, confusion, coma
Coupled with these more special and early symptoms are those of more general
General import. The temperament i
at first raised then gradually falls
becomes subnormal. The blood
pressure steadily falls from the
time of the operation. The leucocytes
of the blood increase in number
while the haemocytes increase.

The most important change in the
blood is a chemical one. Muscin
which is not found in the blood of
the healthy monkey is present
in increasing quantities (according to
the duration of life after the operation)
the only abnormal respiratory
symptom is occasional dyspnoea.
The salivary glands undergo enormous
hypertrophy and secretes great quantities
of mucous. The spleen is increased
greatly in size. The skin is helle
but evidently normal. The eyelids
become puffy and swollen.

Nutrition is notably affected. There
is a mucous degeneration of the
connective tissue generally and
an increase of mucous secretion
there is
There is usually atrophy and falling out of the hair. The postmortem appearances show hemospermia only after excising the thyroid and parathyroid. The subcutaneous tissue is found to be thinly layered. It is swollen jelly-like and excessively sticky. On opening the cavities of the body the same thing is observed especially in the loose tissue of the mediastinum and omentum. The whole connective tissue of the body undergoes a hypertrophy of its fibrous elements, accompanied by a mucoid transformation of its ground substance with an atrophy of the fat. The spleen and salivary glands are enormously hypertrophied. The naked-eye appearance of change which is noted observed in the nervous system was anemic and atrophy. The peripheral nervous system showed no change.
Horsley concludes that ablation of the thyroid gland causes atrophic changes in the central nervous system, in the connective tissue and in the heart generally.

In the beginning of 1890, v. Horsley published a monograph in which he records a number of experiments made upon cats. He found that if cats operated on by him died after showing symptoms similar to a great extent, to a great extent, as those observed by Schaff in dogs, 1 by Horsley in cats, monkeys. The great interest of this paper however is not in these experiments but in certain experiments in transplanting the gland, which will be referred to later.

The study of these experiments as the above mentioned observers warrant us in concluding that the thyroid gland is necessary to life, that when it is removed there follows a train of symptoms which are mostly due to disturbances of the
...ances of the lowest motor and highest pyrogenic critical centres.

Of all the experimenters who operated on dogs, only two found no fatal consequences to follow and these are the two earliest observers named Cooper in 1836 and von Rath in 1841. The animals on which Cooper however operated were observed ill when he killed them on the 13th day; I might name also short had they not been killed. Von Rath is the one observer who found no evidence of the thymic in animals, he however operated twice once on a dog and once on a goat. Barceló had two recoveries out of three cases of experimental removal of the gland; but all subsequent observers had a much smaller proportion of recoveries. Schuff, operated on 60 dogs with one recovery in a vast majority of cases of experimental removal of the thyroid gland in
gland in dogs, cats, and monkeys. The result has been that the animals have shewn symptoms due to a disturbance of the central nervous system, have become emaciated and have died in coma. It seems to be very probable that dogs which recovered from the operation without ill effects, had either an accessory thyroid, or else the gland had not been completely removed. Thus, for example, showed that the one dog which recovered out of his nine operations possessed an accessory gland.

While these experiments on animals were going on, certain symptoms were noticed in patients very similar to those of the operation for the complete removal of the parathyroid glands in man. In 1882, by J.L. Roux, it was noted...
read a paper before the Société medicale of Geneva, in which he communicated the results of a number of cases of total extirpation of the goitrous thyroid gland in man. That paper was published in April 1883. He drew attention to the symptoms which sometimes followed thyroidectomy, but no reference was made to the similarity of these symptoms to those of myxedema as known in England. In June 1883 he discussed that relationship, but after it had been first pointed out by Rovner.

Between the publication of Rovner's first and second papers, Rovner in April 1883 read a paper before the Emperor of German Surgeons, and under the name of "Chaleinie Schlimpina" he described the symptoms he observed to follow total extirpation of the thyroid.

A few months after thyroidectomy, Rovner's patient began to complain of lassitude, weakness, and hairiness...
and heaviness in their limbs, these earliest symptoms being often preceded by dragging pains in the body generally. A feeling of coolness in the extremities follows, and in the winter the hands and feet are apt to become of a bluish-red colour and to be subject to chilblains. The mental activity decreases gradually to the slowness of thought; is added slowness of speech and slowness and heaviness in performing movements of any sort. With the occurrence of habitual of thought and movements oedema, swelling are apt to show themselves. In the majority of cases, the swellings take the form of permanent broadening of the face. Oedema of the lower eyelids often occurs while at the same time the hands and feet get thickened and coarser. The whole trunk too gets coarse and thick the skin loses its suppleness and
appear infiltrated. The hair is apt to fall out and what remains is thinner and less subtle than normal. Very great oedema is observed in more advanced cases. The growth of the body, if the operation be performed during the period of growth, is arrested in a remarkable manner.

These symptoms, as symptoms very like these were observed in 16 out of the 18 cases on which Koebele operated, I had the opportunity of making a personal examination some months after the operation. The two cases in which symptoms of cachexia strumipriva did not appear, may be discounted because in one a small piece of the gland was inadvertently left behind during the operation, and in the other there was an accessory thyroid. In both cases there was well marked atrophy of the active gland substance left behind.
Kovner did not at first attribute these symptoms to loss of function of the gland, but rather to chronic asphyxia brought about by disturbance of the structures in the neighbourhood of the thyroid. He subsequently however adopted the view that these symptoms were due to loss of function of the gland.

In November 1883 Dr. Felice Simon, having seen this paper of Kovner's, brought it under the notice of the Clinical Society, who pointed out the remarkable resemblance between cachexia staminifera as observed by Kovner and myxoedema as described by Ad. and he argued that myxoedema, cretinism and cachexia staminifera were all diseases due to the loss of function of the thyroid gland.

A year later the Clinical Society recognised the importance of the subject of myxoedema, and its relation
its relation to the thyroid gland appointed a committee to inquire into, and to report on, this subject.

The report of the committee was published in book form as a supplement to the Transactions of the Society in 1856, and contains the experience of surgeons all over Europe as to the results which follow thyroidectomy.

The committee, of which Dr. Old was chairman, sent circulars to all surgeons who were known to have removed the gland by operation, asking for information as to the ultimate condition of their patients. So this circular they received 69 replies. Their report contains the substance of 64 of these replies, as it was found impossible to utilise the replies of five surgeons. The result of the inquiry of this committee may be shortly stated as follows:

Case
Cases recorded of complete thyroidectomy 408

died shortly after operation 59
malignant disease 20

Cases from last report of 31 — 110
leaving complete recovery pre operation 298
subsequent history not traced 21

Cases recovered from operation and whose subsequent history was known
leaving cases recovered from operation 277
who developed accessory thyroid or had return of goitre 22
leaving cases recovered from operation 233-
without demonstrable thyroid tissue

7 subsequent histories known
of these 255 patients 186 remained
free from cæsarea sthenipure, while
69 a about 1 in 3 got Cæsarea sthenipure .

These figures show that in a
clarge number of cases of thyroidectomy
a disease very like myxoedema
follows, a

To sum up the facts already
stated, we find that in dogs,
cats and monkeys, the excision of
the thyroid is followed in a vast
majority
majority of cases, by symptoms mostly nervous, and very like myxedema. While in man the removal of the gland in many cases produces similar symptoms. In these two groups of cases 1. excision of the healthy gland in animals. 2. excision of the goitrous gland in man. As myxedema, there appears to be only one factor in common, and that is the loss of function of the thyroid. Even if myxedema be left out of account, it is still a quite sound conclusion to draw from the facts, that caerophenia strumipora of animals as described by Schüff & Flory, and of man as described by Krukenberg are the direct consequence of loss of the function of the thyroid; but when we find that in myxedema, a disease obviously nearly identical with the others, the thyroid is atrophied and functionless, we may say pretty certainly that the loss of function of the
of the brain which causes mental
inoculations of the symptoms
in three groups of cases
by Horsey

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Having seen that myxcedema and carcinoma shrunken are in all probability due to loss of function of the thyroid, we have made the first step towards their rational treatment, and the result of the modern treatment of these diseases, puts it beyond all doubt that they really are the consequence of the loss of function of that gland.

Of the experiments who thought about artificial operative myxcedema in animals, some have been able under certain conditions to mitigate the severity of the symptoms. Thus, 17. Bovis found that he could arrest the symptoms in dogs from which he had removed the thyroid, by transfixing the blood of a healthy dog. The relief of the symptoms however was only temporary. The blood of the healthy dog contained the products manufactured by its healthy thyroid in the absence of which pure in the blood of the dog without the thyroid caused the disease
the anise, and the reason of the
relied being only temporary was that
these products soon got used up.

Sennett found that by transplanting
the thyroïd of an animal of the same
species into the abdominal cavity of
a dog that had been the subject of
thyroïdectomy, that the operation thus
loses its danger, and an essential
amount of its effect.

On transplanting in his 23 monophasic
controls a number of cases of trans-
plantation of the Thyroïd after its
excision in nine animals, extractions
of one lobe of the Thyroïd was performed.
The lobe was kept warm in normal
Salm’s solution and quickly transplanted
either into a fold of the Mesentery
or into the subcutaneous tissue. In
about three weeks the other half
was removed from the neck of
these nine dogs eight died of typical
symptoms of loss of the thyroïd.
Postmortem examination revealed the
fact that in these eight dogs the
transplanted
transplanted gland had degenerated. The ninth animal however survived and increased in weight. It was killed after a time and the postmortem examination showed that the transplanted myxovia had organized was vascularized and was in no way degenerated. In three out of four cases in which the transplanted gland was made between the fascia and the peritoneum the gland degenerated, the animal died, while in the fourth case the gland organized, and the animal continued to live on quite normally.

These observations show that the transplanted gland, if it can be got to organize and vascularize can take up the function of the removed gland.

On the 8th February 1890 Prof Herschel published a short note in which, seeing that no form of treatment yet known was of much benefit in myxoedema, he proposed to transplant the thyroid of a sheep

the thyroïd of a sheep, below the skin of the first myxedema patient, in which he was afforded the opportunity. I need not state that it might be for to live and perform the function of the abdominal gland, in the same way as it had the transplanted gland had done in certain cases of Schiff & Einfelsberg.

28 Dr. Bichat of Paris was the first to try the effects of transplantation in a case of cachexia stomachica. In January 1889 he transplanted a piece of the thyroïd from a case of goitre into the abdominal cavity of a woman who was suffering from cachexia after the removal of her thyroïd. The result was that the patient was nearly immediately benefited and improved continued for about three months when evidently the transplanted gland died, and the symptoms again progressed. A second transplantation was followed by great improvement.

29 Batteneourt & Strans were the
just to read a case of myxedema
passing for myxedema flaps introduced
are half of the thyroid of a sheet
beneath the skin of the infra-mammary
region on each side. The operation
was followed by immediate improved
moment's became easier, speech more
natural, the number of red blood
corpuscles increased. The temperature
rose to the normal. The subcutaneous
edema diminished and the perspiration
was restored. The operators considered
that the improvement commenced the
day after the operation; it could not,
in so short a time, be due to the
 gland becoming vascularised and so
functional, but suggested that it was
due to the absorption of the juice
of the healthy gland by the tissues
of the patient.

Dr. Henry Teurban in passing
a sheet's thyroid into a myxedematous
patient was surprised to see the
immediate improvement which
followed the operation. Before fixing
the past
the graft by sutures he rubbed the
plunging surfaces of the great steel's
plunged into the wound. Believing that
the immediate improvement was
due to abstaining of the juice he
proposed to try injecting the juice
in the first case of myosarcoma had
presented itself. In the same number
of the journal, however, Dr Murray
reverses the treatment of his first
case by injection.

31 In an interesting paper read
before the Medical-Chirurgical Society
of Edinburgh in 1892, Dr Macpherson,
superintendent of the Darnerth Asylum,
describes a case of myosarcoma-
treated by thyroidea pasting with
beneficial results. He engrafted
t he thyroidea of a sheep below the
skin of the inframammary region.
The patient showed a marked improvement
within 12 hours. Her speech and
movements became quicker; the
temperature became normal; the
anaemia was removed, menstruation
returned.
returned v altogether the symptoms of myocoelema were partly alleviated.
Dr. MacPherson thinks that in this case the immediate improvement was due to the absorption of the juice of the thence planted v the ultimate improvement to the vascularisation of the part.

In July 1891 Dr. George R. Murray of Newcastle read a paper in the section of Orthopaedics at the annual meeting of the British Medical Association held that year in Bournemouth. In this paper he first takes note of the probability of myocoelema being due to loss of function of the bonyoid v he remarks on the immediate improvement which followed the transplantation of the hand noted that surgeons who had performed transplantation, an improvement too rapid to be due to organization of the gland but probably due to the absorption of the juice into the tissue.
of the patient.

Now it seemed to Murray to be reasonable to suppose that the same improvement might be brought about by simply injecting leaf juice, or an extract of the imprudial gland of the sheep beneath the skin of the patient. The rationale of Murray's treatment was simple in its essence. He conceived that mycocelema was due to absence from the body of some substance which was present in the normal gland whose presence in the system is necessary to maintain the body in health. His treatment was adopted aimed at supplying this substance artificially, and the result was successful far beyond expectation, and mycocelema which was formerly the most intractable of diseases is now more amenable to treatment than almost any disease we know of.

After trying one or two methods of treatment only slightly different
different in detail, he is able to recommend as most convenient that the patient should receive a specific extract of one drop of a sheep's thyroid in two injections in the course of a week.

The first case healed of I. Murray, by means of injection of the extract, presented most of the typical features of myxedema, including lassitude, slowness of speech, action, slouched expressionless face, subnormal temperature, absence of irritability, extreme sensitivity to cold, shawl-like hands and feet, dry skin, scanty hair. During the first three months of treatment she received by injection the extract of 25 sheep thyroids. The patient steadily improved and at the end of three months her extreme weakness was entirely a past phenomenon or what it was before treatment commenced. She felt more active, could undertake more work, refreshment occasionally occurred.
occurred, menstruation took place regularly although it had been absent for years. The old sensitiveness to even a disapprover.

In this, the first case, seven treated by injection, the beneficial results of treatment seemed to be beyond a doubt, and its publication soon caused physicians to give this method of treatment a fair trial. After the appearance of this paper, medical journals contain frequent notices of cases of myxedema treated by injection of the juice of the thyroid. The beneficial results were well marked in all cases reported except two which are reported in the same observer (Dr. Woodwell Clark) as these are the only two cases on record in which the result is stated to be "no improvement." I think we may safely assume that there has been some error probably in the method of procedure.

This method
This method of treatment was not
field until the end of 1892 when
were appeared simultaneously in the
British Medical Journal reports
of cases treated by thyroid feeding by
Dr. Hector MacKenzie of London and T. C.
of Plymouth. Dr. MacKenzie administered
the case from spleen plasma, while Dr.
used the juice. The result
both cases was perfect, successful.

The disadvantages of hard to
head cases of myxedema by continued
hypodermic injection were obvious,
when it was reported that equally
good results could be obtained
by administration of the remedy
by the mouth. The method of
treatment by hypodermic injection
was soon superseded by it easier
and more convenient method
of administration.

Just as the medical journals
had formerly contained many reports
of cases treated by injection, so
now reports of cases of thyroid feeding
became very
became very numerous; by the result
in every case I have been reported
has been improvement of the symptoms.
It is evident from the fact
that the symptoms can be relieved
by administration of the thyroid gland
by the mouth, that the active
principle which the gland contains
is which is apparently from the system
in myxoedema is not affected by
parotid juice.

In July 1893 a case
of myxoedema came under my
observation and was treated by me.
by thyroid feeding, as it was
almost a typical case of this
affection and the result of the
modern method of treatment I
shall give a short history of the case.

Miss A. M., aged 50, came under
my care on the 1st of July 1893. At
that time the disease was of about
four and a half years standing.
Premier to the commencement of
a present attack, in the beginning of
1889.
1889, she had enjoyed exceptionally good health; for a dozen years childhood had been confined to bed through illness, that was about twenty years ago when she had an attack of what she describes as "catarrh of the stomach," which confined her to bed for seven weeks. Within the exception of that her previous medical history seems to be very near perfect. Her family history too is good. She is the youngest of a family of eight, one of whom still survives, and are in good health. Her father died as the result of an accident, her mother a woman of 86 years of age enjoys excellent health. I can find no history of any hereditary disease in her family; certainly none is now tendency to phthisis or disease of the nervous system. The first symptoms of the present attack appeared in 1889, for to that time she had had a very

...
even temper, but she now began to give way to violent fits of rage, on very slight provocation, but with her anger arrested when it usually and very quickly, she became horribly placid and listless. Gradually a change came over her whole appearance. She became stouter, her features and expression changed so much that in 1890 many of her friends failed to recognize her. Her body slen- 

done way. She became unfit to undertake one half of the work she formed accustomed. In 1890 her

hair became bell out a she soon 

just so bald that she had a wig

made, which she wore regularly. About

twice her voice ceased pitch in the

during 1890, 1891, 1892 it was her

sister change in her condition

When I first saw her in

1893, her appearance was

distinctly of melancholy. Her face

was flat and expressionless, her

now was broadened out. Her lips were
Trick, there were blab blab blab blab below her eyes, her skin was cold dry and hard, her hands were fat and stumpy, her hair had almost disappeared from her head & eyebrows, she was fat and blab blab blab all over. She was listless and disinclined for any exertion. Her speech was very slow, and her voice sounded more like a man's than a woman's. Her temperature in the axilla was 97.2° F. Her symptoms were of which she complained most were languor, disinclination for work, debility, loss of appetite, inability to keep herself warm, insomnia. During the warmest days in summer she was as cold as winter in the dead of winter no matter what was the external temperature, or how nearly was two exertion. She was about, she never perspired. At nights, although she slept very little, she lay quite quietly.
quietly, thinking about nothing in particular and feeling very comfortable, during the winter she suffered terribly from cold. I ascertained that the daily amount of urine passed was about 20 ounces. It contained no albumen.

At the beginning of his illness she consulted various physicians, who seem to have prescribed large quantities of arsenic and iron, but as she never made any improvement under drugs, she allowed Dr. Price unhesitatingly to take its own course.

Treatment began on the 1st of July 1893, and consisted in administration of a mixture of the dried seeds, hogweed plant manufactured by Messrs. Burns & Wollmen, of London. Of this preparation she took on each alternate day a quantity equal to about 30 grains of the fresh plant. After a fortnight she took 20 grains every other day, after another
fatigue 10 p.m., ten 5 p.m. v now see tables regularly 5 p.m. twice a week.

After the first day of treatment the quantity of urine rose from 20 ounces to 90 ounces v the gradually increased until now it is about 140 ounces per diem. During the first fortnight of treatment she complained bitterly of an intense feeling of soreness all over the body, which she described as feeling "as if she had been beaten all over with sticks." Within three weeks that soreness had entirely passed away v her emaciation showed a vast improvement. Her features assumed a more natural expression, her lips became thinner the puffy swelling disappeared from below her eyes, her skin became moist and softer to the touch, her hair began to appear again a her head, her old listlessness had gone, her voice was more like a woman's.

temperature
Her temperature was normal. Her appetite improved & she now slept well.

The improvement in her condition was gradual. In January 1894 she told me that she was as well as ever she was all her life. She presented none of the appearances of myxedema. The wry was unaltered with, as she had from a eusynic and rich of hair.

There is every reason to suppose that there will be no relapse so long as she continues taking a bi-weekly dose of the fluid. I have found that, when she takes less than 3 grains of the fluid every third or fourth day, there are indications of a relapse, but when she takes two doses of 5 grains in the week she remains well.

Although as a rule there are no unfavourable symptoms produced by administration of the thyroid gland.
land, still there are certain dangers that may be encountered.

Dr. Murray lost two of his patients through cardiac failure. One was a woman of 62 years of age, in whom myocardia had been present for six or seven years. She suffered very from cardiac dyspnoea. Weekly injections improved her condition partly, but she was sent up with an attack of bronchitis. On recovery from this attack, she went out and while walking up a hill, more surely than usual, she died suddenly from cardiac failure.

The other patient whom Murray lost was a woman of 64 years of age, in whom symptoms of myocardia had been present for about five years. She suffered from considerable dyspnoea on exertion, and had several attacks of syncope; her heart sounds were weak and intermittent, but no murmur could be detected.

In her case
In her case weekly injections were given for about three months with
the result that the symptoms of
depression had nearly
disappeared, when suddenly one morning,
while sitting to the fire, when she
fainted and died from cardiac failure.

3 Prof. Jamieson Stewart reports
a case in The Practitioner in
which we nearly lost from a same cause.
That case is that of Mrs Wythie who
has been exhibited as a case
of depression to many classes
of students at The Edinburgh
University, but who now can
be exhibited as an example of
the result of the modern treatment
of that disease. She suffered
from mental depression and
incompetence as well as depression.
On four occasions this had not
received a measure of relief from
the treatment from cardiac failing
once due to slight exertion, once
due to violence, only with the friend
one to mental erosion and
men to an extra large dose
at present, had it not been
for the energetic treatment
adopted during one of these attacks
of threatened cardiac failure
very probably a fatal termination
would have occurred.

Cardiac failure is the most
serious result to guard against
in cases of myocardial heating, and
has proved that it is wise to
watch those patients who have
worn hearts or valvular disease
of their hearts during administration
of the remedy.

Dr John Thompson reports a
case of myocardial white excess
which ended fatally five weeks after the
commencement of treatment. Very
treatment she complained present
of severe angina-like pain in
the region of the heart. On one
occasion she was very
faintened at least while sitting up
in bed.
in bed she suddenly fainted and died. Post mortem examination showed that although her valves were sound, the heart was extremely degenerated. At the conclusion of his paper Mr. Thompson insists that we should be very careful in treating patients with disease of the heart valves, as with weak hearts.

Dr. Lundie in a valuable paper points out, in addition to the risk of cardiac failure, other unpleasant effects which may follow administration of the thyroid gland, namely weakness, pain, nausea, many patients complained of esophageal weakness from treatment but that seems to be due to the fragility of the column. She has suffered in many cases at the commencement of the treatment is probably due to the circulation through the capillaries of the mucin which has been
abundant i to subcutaneous
brane previous to treatment, and
as which treatment is causing the
removal. My patient suffered
from this pain in a very marked
degree, but it had entirely dis-
appeared after three weeks. Nausea
which is not an uncommon result
of treatment never seems to have
been so severe as to cause any
alarm.

It was till 1891 and doubt
existed that myxedema or allied
diseases were due to loss of
function of the thyroid gland, the
result of the treatment initiated
in that year by Dr. Murray, put
that doubt at rest, for his plan
of treatment which has been so
successful consists essentially in
supplying the system the product
of the gland which is myxedema
is functionless.
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