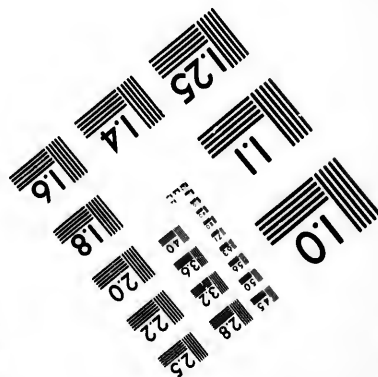
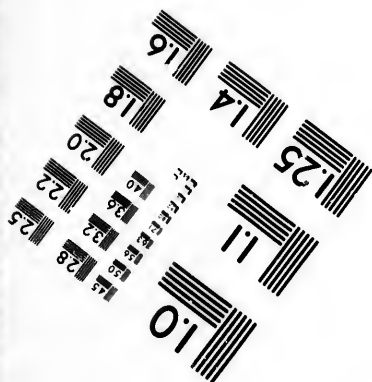
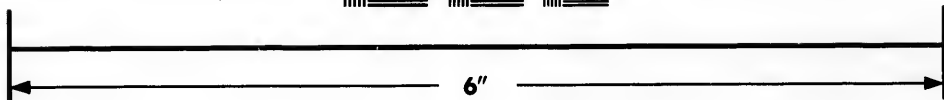
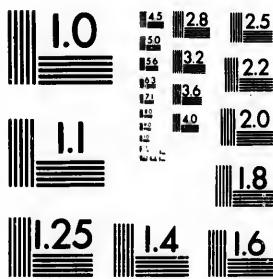


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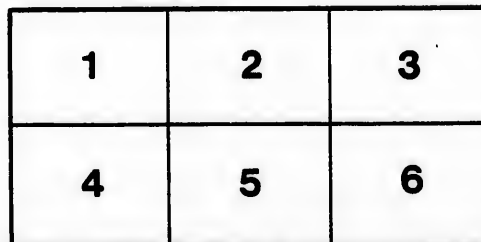
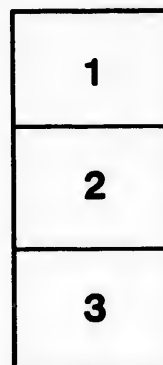
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THYROID FEEDING  
AND ITS  
APPLICATION TO THE TREATMENT OF INSANITY.<sup>1</sup>

BY

T. J. W. BURGESS, M.D.

Medical Superintendent of the Protestant Hospital for the Insane, Verdun, Que.

The paper which I have prepared for your consideration is based upon a series of experiments made at Verdun, in the carrying out of which, as well as for the clinical records, I am greatly indebted to my assistant, Dr. G. H. Manchester.

Thyroid feeding, as now practised, has been the gradual outgrowth of a suggestion made by Prof. Victor Horsley in February, 1890. Reasoning from the experiments of Schiff, Eiselsberg, and himself, he advised the transplantation of the thyroid of a healthy sheep into persons affected with myxœdema, with a view to arresting the progress of a disease supposed to be due to the absence or incapacity of the normal thyroid gland.

M. Lannelongue, of Paris, during the following month, first put the suggestion into practice, and the operation was soon repeated in other places. Varying results followed the several cases, but benefit enough ensued to show that there was something in Prof. Horsley's suggestion.

In some of the cases operated upon changes were recorded as occurring within a few hours after the transplantation, and this fact led Dr. George Murray to the conclusion that they must be due to absorption of the thyroid juice already present in the piece of tissue implanted, because the interval was too short to have allowed the formation of either fresh secretion or new thyroid tissue. Acting upon this supposition he made an extract of fresh thyroid and injected it subcutaneously into a myxœdematous patient. The astonishing results obtained were communicated to the medical world at the meeting of the British Medical Association held at Bournemouth in 1891.

The risks of a large operation being done away with by Murray's method, while at the same time the immediate results were even more

<sup>1</sup> Read before the Montreal Medico-Chirurgical Society, March 20th, 1896.

satisfactory, at once led to a number of trials of it, both in asylum and private practice. The same marvellous benefits as those recorded by Dr. Murray almost invariably followed.

The next advance was made by Dr. Hector Mackenzie, who, in 1892, substituted feeding on fresh thyroid glands for the subcutaneous injection of the extract prepared therefrom. The beneficial results were no less marked. In 1893 Dr. Arthur Davies substituted for feeding on the raw or slightly cooked glands, the method now most in vogue, namely, the administration by the mouth of a powdered extract of them. Since then many preparations have been put upon the market in the shape of tabloids and pills of both thyroid and thyroïdin, but none, to my mind, are as reliable as the desiccated thyroids prepared by Parke, Davis & Co. In this preparation ten grains of the powder represents one sheep's thyroid of average size.

The fact that in all myxœdematous patients there is either actual insanity or an affection of the intellectual faculties bordering thereon, naturally called the attention of asylum physicians to the new treatment for a disease of which most of the examples are found in their care.

Their attention so attracted, it occurred to Drs. Macphail and Bruce, of the Derby Borough Asylum, that if they could at will increase the pulse and temperature, so often found lowered among the insane, they might get a corresponding mental improvement similar to that seen in myxœdematous patients after thyroid treatment, and such as has long been known to occasionally occur in old cases of insanity after erysipelas and the exanthemata. They at once instituted a series of experiments, the details of which were recorded in a conjoint article published in the *Lancet* of October 13, 1894. A second article on the same subject was published by Dr. Bruce in the *Journal of Mental Science* for January, 1895.

About the same time, but quite independently, Dr. Clarke, of Rockwood Hospital, Kingston, Ontario, reasoning from similar data, had set on foot a like series of investigations, an account of which appeared in the *American Journal of Insanity* for October, 1895. It was in the interval between the appearance of Dr. Bruce and Dr. Clarke's articles that we entered upon the experiments, some details of which I now propose to lay before you.

Four patients were selected for experiment, two of them being cases of melancholia with stupor, one a case of dementia following melancholia with stupor, and one a case of chronic mania. The melancholic cases were comparatively recent, six and ten months respectively, but were making no progress toward recovery under

ordinary moral and medical treatment. The dement was of nearly two years standing and one our dullest patients. In the case of chronic mania, which was of over four years standing, the treatment was continued only a few days, as it was found impossible to keep the patient in bed without resorting to restraint.

Preparatory to commencing the treatment the patients were weighed, then put to bed, and the pulse and temperature taken morning and evening for several days. A quantitative and qualitative examination was also made of the urine. Regular full diet, the same as that given the other patients, was allowed, and the nurse was instructed to keep the bowels open, giving cascara sagrada if found necessary. Desiccated thyroid was given three times daily in doses varying from five to ten grains, with the ordinary meals. Mental and physical changes were noted from day to day, and the pulse, respiration and temperature were taken morning and evening throughout the whole period of treatment, as well as for some days after the stoppage of the thyroid. After-treatment consisted in the administration of tonics.

CASE I.—M. A. G., female, aged 19, farmer's daughter, fair education. This, her first attack, began seven weeks prior to her admission to the hospital. The disease was strongly hereditary, and she had marked suicidal tendencies, with hallucinations of sight. Exciting cause unknown.

Admitted June 11, 1895. A rather intelligent looking girl, but dull and somewhat anæmic. Sat with head hung down and could hardly be got to speak or to look one in the face. Examination revealed no physical disease anywhere. Diagnosis of mental disorder, melancholia with stupor.

October 5th.—Has varied at times since admission, but on the whole keeps getting steadily duller and more despondent. Has made several attempts to strangle herself. Is now very resistive and can hardly be got to speak. Refuses food and has to be fed, sometimes with a spoon, sometimes with the stomach tube. To-day was put to bed preparatory to commencing thyroid treatment. Weight 94 pounds, pulse 64, temperature 98°, respirations 24, urine normal.

October 7th.—Stopping in bed seems to be quite to her taste. Some vague suicidal wishes expressed.

October 8th.—Refused to eat; drinks almost nothing, and urine is in consequence much diminished in quantity. In the morning pulse 60, temperature 98°, respirations 21. Began administration of thyroid in five grain doses three times daily.

October 11th.—Takes kindly to the thyroid, which she says she likes,



but as yet temperature has not been affected, though pulse rate shows a decided increase.

October 14th.—Bowels very loose, but she has been taking small doses of cascara to relieve costiveness. It was ordered to be discontinued.

October 15th.—Pulse this morning is up to 102, temperature 98.6°.

October 18th.—Pulse increased to 110 with diminished tension; temperature 98.4°; is getting thinner.

October 21st.—Pulse still elevated (109); temperature 99.6°. Sleeps well and eats freely of her own accord. Is brighter mentally.

October 25th.—Has grown gradually brighter during the past four days. Now answers questions readily and is very good natured. Pulse to-day ranges from 110 to 115. The thyroid was reduced to one five grain dose daily.

October 27th.—Was allowed to sit up for a short time.

October 29th.—Up during the day, but complained of dizziness and said she felt stupid. Thyroid discontinued.

November 1st.—Pulse fallen to normal, temperature 98°. Is doing a little work in the ward. Weight 90 pounds.

November 6th.—Very bright mentally, lively in actions, and working steadily at sewing, etc.

November 21st.—Bright, industrious, and converses freely. Weight has increased to 94 pounds, exactly the same as when the thyroid feeding was begun.

December 1st.—Is apparently quite well mentally and physically. Has got much stouter.

December 18th.—Sent home on trial. Weight 113 pounds.

December 30th.—Reported as keeping quite well. Has gained flesh and now weighs 120 pounds, that is 26 pounds more than when thyroid treatment was begun.

January 16th.—A letter from her father states that she is stouter than she has ever been in her life, that she eats and sleeps well, is bright and cheerful, in fact quite herself again. Was discharged recovered.

CASE II.—C. H., aged 30, single, labourer's daughter, several previous attacks. First symptoms of present attack manifested themselves about five months before admission. Certificates stated that patient was melancholy, wanted to lie in bed all day, would not speak, and took no interest in anything or anyone. Ascribed exciting cause, la grippe.

Condition on admission, April 25th, 1895.—Much run down physically. Dull mentally, and dirty in habits. Persisted in lying



huddled up on a sofa or in a corner of the room. If efforts were made to rouse her, which it was difficult to do, she became very irritable and profane. Apart from her swearing could not be got to speak. At times tore her clothes and pulled out her hair. Diagnosis: melancholia with stupor.

Three months after entering the hospital she had a severe attack of diarrhoea, which lasted over a week, and during which she was much brighter mentally, speaking to the nurses and answering questions, though slowly and apparently with much effort. She soon relapsed into her old condition of stupor, refusing to speak and resistive to anything being done for her.

October 12th, 1895.—Put to bed preparatory to thyroid feeding. Weight 86 pounds, pulse 68, temperature 98°, respirations 21, urine normal.

October 16th.—Thyroid commenced in five grain doses three times daily,

October 18th.—Pulse increased, but no rise in temperature. Sleeps well, eats but poorly.

October 20th.—Pulse rate increased 20 to 30 beats; temperature still unaffected; is very irritable.

October 24th.—Brighter mentally and will now answer questions. Sleeps and eats well.

October 28th.—Pulse 106, temperature shows no rise.

November 3rd.—Is much emaciated; hair falling out so rapidly that her pillow is covered with it.

November 5th.—Dose of thyroid increased to ten grains three times daily.

November 9th.—Hair still falling out and she is now quite bald. Pulse much accelerated, but temperature still remains normal.

November 11th.—Though rather brighter there has been no marked mental change, and thyroid treatment was discontinued in the hope that the stage of reaction might initiate some more favourable result. She eats well, but is very thin; is cross, and when she answers a question does so very snappishly; covers up her head when anyone goes near her.

November 13th.—Got up for a short time and was found poring over a picture-book, seemingly much interested. Answered quietly and rationally when spoken to, with no trace of her old snappishness.

November 15th.—Up all day and darned some socks. Seems an entirely different girl. Is now bright and intelligent in expression, active in her movements, and talks freely and sensibly. Asked of her own accord when we thought she would be able to go home. Though very thin she is gaining physically.

November 21st.—Pulse, temperature and respirations normal. Gaining flesh rapidly and now weighs 100 pounds. Keeping well mentally.

December 21st.—Sent home on trial, seemingly quite well mentally and physically. Weight 110 pounds; a new crop of hair appearing.

January 22nd.—A report from her friends states that she is keeping well in every respect, and that her menses, which were suppressed all through her hospital residence, have returned. Her weight is now 114 pounds. Discharged recovered.

CASE III.—F. P., aged 25, married, three children, lumberman's wife, first attack. Her mental trouble began about nine months before her admission, the ascribed cause being domestic infelicity. Her certificates described her as refusing to speak or assist herself in any way, although quite able to do so.

When admitted, August 20th, 1894, she was in a wretched condition both physically and mentally. Her appearance was suggestive of kidney affection. She was thin, anæmic and sallow. Mentally she was intensely dull and stupid. Could not be got to speak. Would sit all day long in one position, paying no attention to anything said to her and seemingly hearing nothing. She was passively but obstinately resistive to everything; to being put to bed or got up, to being bathed, taken to meals, etc. She ate and slept well, but was very dirty in her habits. Diagnosis, melancholia with stupor.

During the first month of her residence she was induced to do a little work, but soon relapsed and would do nothing, not even attend to the calls of nature.

On one occasion, about a year after admission, her feet became swollen and she showed signs of puffiness under the eyes, but examination of the urine discovered no casts or albumen, and the heart, though enlarged, betrayed no adventitious sounds. Put to bed for a few days, the swelling entirely disappeared and she was able to be up as usual.

Her condition remained unchanged up to the time she was put on thyroid, except that she had got stouter and that careful attention had somewhat lessened her filthiness of habits. She was a veritable vegetable, and her mental condition was now regarded as one of confirmed dementia.

October 5th, 1895, nearly two years after the advent of her mental disorder, and fourteen months after her admission to the hospital, she was put to bed preparatory to thyroid treatment. Weight 106 pounds, pulse 90, temperature 99°, respirations 22. Urine was examined and found as follows:—dark amber, slightly acid, specific gravity 1028, clouded, no deposit, no albumen, no sugar.

October 8th.—Thyroid was commenced in five grain doses three times daily.

October 9th.—Pulse and temperature distinctly elevated in the evening, being 112 and 100·8° respectively.

October 11th.—Pulse 114, temperature 102°. Sleeps well.

October 13th.—Refused her food, has diarrhoea.

October 15th.—Pulse reached 130. Is getting much thinner. No sign of mental change.

October 17th.—Elevation of pulse and temperature continues. The patient so weak that it was deemed advisable to discontinue the thyroid.

October 19th.—Pulse and temperature still keep up in spite of the abandonment of the thyroid, and there is no mental change. Her present condition would lead one to suspect the existence of some underlying constitutional disease, probably phthisis, although examination of the chest did not reveal it, and she has had no cough at any time.

October 23rd.—Decidedly brighter mentally. Her countenance has more expression in it and she now replies to questions by nodding or shaking her head. For past two days has been suffering from a troublesome cough and is raising nummular sputa. Pulse to-day is 134, temperature 100·4°.

October 31st.—Physical condition continues much the same, and there is no doubt that tuberculous trouble underlies the present phenomena, although she respire so feebly (cannot be urged to do otherwise) that the stethoscope is completely handicapped. Mentally she is much brighter and to-day asked the nurse to make her some toast for breakfast. This is the first time she has spoken since admission.

November 5th.—Visited by her husband and aunt, to whom she talked quite pleasantly, much to their delight. Is now eating very well.

November 20th.—Is steadily failing physically and has gone back mentally. Her face has assumed its former expressionless character, and she has not spoken for the past ten days, although she occasionally shakes her head in reply to a question. Has developed the typical tuberculous hectic, flushed cheeks, morning remission of temperature, rapid thready pulse, etc.

February 20th, 1896.—Has regained her appetite and eats well, but has continued to fail physically and go backward mentally. Is now very low and very dull.

February 21st.—Died of phthisis, nineteen weeks and four days after commencement and eighteen weeks and two days after discontinuance of the thyroid.

The very favourable results arising from our first trials led to the immediate selection of a second series of cases, five in number, for experiment. One of these was a case of chronic melancholia of several years standing; two were cases of climacteric insanity of one and three years duration; and two were cases of melancholia with stupor, one of eight months duration, the other of nearly two years and fast drifting into dementia. In all these cases the physiological effects of the drug were marked, the result being improvement in the case approaching dementia, as also in the case of chronic melancholia and one of the cases of climacteric insanity; no improvement in the case of melancholia with stupor and the other case of climacteric insanity.

At the present time the treatment is being tested in four additional cases, viz., two of dementia, one of chronic melancholia, and one of melancholia with stupor.

The following is a brief *epitome* of the more important symptoms noted in the thirteen patients to whom the thyroid has been administered:

*Circulation.*—The changes noted in the pulse were increased rate with generally lessened tension. Increase in the rate was invariably present and was remarked almost immediately after beginning the treatment. In the majority of the cases the rate ranged from 110 to 120, in two cases reaching 140, and in one 150. In three of the patients irregularity of the pulse was noted, but no precordial oppression was complained of.

*Temperature.*—In one case only did the temperature fail to rise above normal. The elevation was usually from  $1^{\circ}$  to  $2\frac{1}{2}^{\circ}$ , the highest point reached being  $102^{\circ}$ . The increase seemed to continue until the system became accustomed to the dose which was being given, when there was a diminution, though not to the point at which it had stood when treatment was commenced. An increase of the dose caused it to rise again.

*Respiration.*—Increase in the respiratory rate was the rule, though never to any marked degree. In one case slight dyspnoea was complained of, but for a few hours only.

*Skin.*—A flushed, moist skin was generally present, and in two cases perspiration was profuse. One patient, about three weeks after commencing the treatment, presented a well-marked rash, very similar in appearance to roseola, in the neighbourhood of the knees and ankles. It was plainly apparent for three days, then gradually disappeared. Desquamation was observed in three cases only. It was slight in two instances, but extensive in the third. In one of our

patients the hair fell out in large masses, so that she was soon almost bald.

*Alimentary Canal.*—The tongue generally remained clean, but in a few cases became slightly furred. The tendency of the drug was to relax the bowels, and in two cases we had diarrhoea, which, however, was easily checked. There was on the whole a lessened desire for food, but in some cases the appetite remained unaffected. Thirst was marked in three cases, and in two instances there was some nausea and vomiting.

*Urine.*—Examination of the urine revealed nothing noteworthy either as regarded quantity or quality.

*Menstruation.*—Not affected.

*Weight.*—All our patients lost noticeably in weight during treatment, the loss in one case amounting to nearly thirty pounds. The gain following cessation of the drug was very rapid and like that so often seen after typhoid fever. One patient gained nineteen pounds in four weeks.

*Muscular System.*—More or less fibrillar muscular tremor, or even twitching, was nearly always present. Sometimes it was the tongue, sometimes the facial muscles and sometimes the extremities in which these symptoms were most marked. In one case the twitching extended over nearly the whole voluntary muscular system, and to such an extent that the patient could not sit or lie still. Nictitation is very marked in one of the cases now under treatment.

*Mental Functions.*—In all cases there was a decided mental change. The mind became more active, the countenance brighter, and the manner and actions more lively. Patients who had been silent and inattentive to their surroundings spoke and displayed a quite unaccustomed interest in passing events. Pressed still further with the drug there was a tendency to excitement and talkativeness, in some cases to resistiveness and irritability, and in one instance to destructiveness of clothing. The mental change was generally apparent while the treatment was being pursued, but in one case it did not appear until the stage of reaction was established. Sleep did not seem to be at all affected.

#### RESULTS OF TREATMENT.

*Chronic Mania.*—One case; treatment abandoned as patient would not stop in bed.

*Chronic Melancholia.*—Two cases; one improved, and one under treatment and improving.

*Melancholia with Stupor.*—Five cases; two recovered, one much



improved, one unimproved, and one under treatment. The mental change in the improved case was very remarkable. The patient, who had not spoken for a year, talked quite fluently and displayed a vivid recollection of all that had occurred since her admission; said she always knew her mother when she came to see her and wanted to speak to her, but could not; was anxious to eat, but could not help resisting the administration of food, etc.

*Climacteric Insanity*.—Two cases; one improved, one unimproved. The latter case was taken home soon after the abandonment of the treatment and has since recovered. Whether the thyroid contributed to the recovery is a question, but I am inclined to think that it must have had some influence, as beforehand the case seemed utterly hopeless.

*Dementia*.—Three cases; one temporarily improved under treatment, but relapsed as soon as it was discontinued, two under treatment and displaying the physiological effects of the drug in a marked degree.

*Recapitulation*.—Two cases recovered, four improved, three unimproved, four under treatment; total, thirteen.

#### CONCLUSIONS.

From our own cases and those published by Drs. Bruce and Clarke I feel convinced that thyroid feeding will be found of benefit in certain forms of insanity.

The cases to which its use seems best adapted are some of the various forms of melancholia, especially melancholia with stupor, puerperal and climacteric insanity, and incipient dementia.

It is especially likely to be beneficial in a class of cases often seen in asylums, where improvement has progressed to a certain stage then come to a stand-still in spite of efforts to the contrary. In such cases, which are prone to drift soon into dementia, the fever induced by the thyroid seems to give a fresh impetus toward complete recovery.

Its use is contra-indicated in cases of acute mania and melancholia where the already existing excitement is rapidly reducing the weight.

In regard to its use where there is co-existent disease of the lungs, my experience, as recorded in Case III, is quite different from that of Dr. Bruce, who states that in five of his twenty-three cases where there were symptoms of phthisis, although the disease was not active, the immediate effect of the thyroid was to light up activity in the phthisical areas, but on discontinuing the drug the phthisical symptoms disappeared and the patients gained in weight. In this case,

while the thyroid showed a marked and favourable effect, though temporary, on the mental condition, it unfortunately fanned into active flame the latent phthisis slumbering in the system and probably shortened the patient's days. From my own experience, therefore, I would regard thyroid as contra-indicated where there exists any sign of organic disease of the great viscera.

Tolerance of the drug varies in different individuals, and as yet it is impossible to fix the dose which will produce the physiological effects without at the same time giving rise to toxic symptoms. Grains five three times daily was our initial dose in all cases, and in one instance only was it found necessary to increase this dose beyond ten grains to obtain the desired action.



