

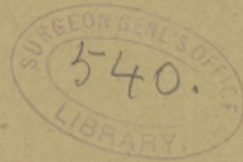
SINKLER. (W.)

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SPORADIC CRETINISM,  
AND  
ITS TREATMENT BY THYROID EXTRACT.

BY  
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FIG. 1.—Isabella McG. Sporadic cretinism.  
Before thyroid feeding.

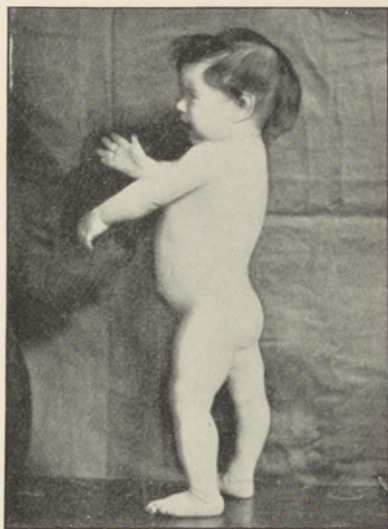


FIG. 2.—Isabella McG. Sporadic cretinism.  
Before thyroid feeding.



FIG. 3.—Isabella McG. Sporadic cretinism.  
After thyroid feeding.



FIG. 4.—Isabella McG. Sporadic cretinism.  
After thyroid feeding.



# SPORADIC CRETINISM,

AND

## ITS TREATMENT BY THYROID EXTRACT.

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SPORADIC cretinism, as is well known, is generally met with as an endemic disease, and exists to some extent in almost every part of the world. In Europe it is very prevalent, and seems to find its chief habitat in regions in which goitre is also endemic. In the valleys of the Alps, Vosges, and Pyrenees it is most common, but it is also met with endemically in Spain, Austria, Germany, the Netherlands, and Russia. A few cases occur in Scotland, but in England it is rare. Singularly enough, it used to exist in Somerset, England, but at this place it is now extinct. It is said that the disease is met with on the continent of Asia, on the northern and southern slopes of the Himalaya Mountains, and a few cases are to be found in South America. In North America it is exceedingly rare, and it is doubtful if it has ever existed as an endemic disease in this country. It has been stated that cretinism occurs in the valleys of Vermont and Massachusetts, and in California; but Osler<sup>1</sup> has shown that the authorities for these statements were probably misinformed as to the extent of the disease in the places cited.

Sporadic cretinism occurs occasionally in all countries. Within the past few years a number of cases have been reported in this country. Osler,<sup>2</sup> who has gone to considerable trouble to collect all the cases which have been described in the United States, has succeeded in obtaining the reports of eight cases, and has placed on record three other cases which have come under his own observation. Lloyd<sup>3</sup> has reported one case and Townsend<sup>4</sup> has reported another. Mills<sup>5</sup> refers to several cases which he has seen and studied, some of which he speaks of as "cretinoid idiocy," which he saw

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<sup>1</sup> American Journal of the Medical Sciences, November, 1893.

<sup>2</sup> Loc. cit.

<sup>3</sup> International Clinics, vol. ii., series ii.

<sup>4</sup> Archives of Pediatrics, November, 1892.

<sup>5</sup> American Text-Book of Diseases of Children.

in the institutions for feeble-minded children at Elwyn, Pennsylvania, and Vineland, New Jersey. I myself have seen two cases, one of which is that reported by Lloyd.

Cretinism may be defined as a chronic disease, characterized by a form of arrested mental and physical development. The patient is of dwarfish stature, and the head is unduly large and misshapen, being flattened on top and rather square in shape. The hair is coarse and thin, the skin is rough, dry, and wrinkled, thick and œdematous in many cases. The tongue is large, and in many subjects constantly protrudes from the mouth. Fatty pad-like deposits exist over the clavicles, and the abdomen is large and pendulous. The thyroid gland is usually absent, but it may be enlarged. The spine is curved, the lower cervical and upper dorsal region forming a hump, and the lumbar region making a deep anterior curvature. The temperature is usually low. In the case referred to by Bury<sup>1</sup> the temperature was 95° or 96° F., with a daily variation less than normal. The teeth are erupted late, and the anterior fontanelle does not close until the child is four or five years old. The epiphyses of the long bones are enlarged, and the tibiæ are bent as in rickets.

The intelligence of cretins is of an exceedingly low type, although it varies in different cases. Many are deaf and dumb, and show simple idiocy. The disposition may be mild, but cretins are often irritable and liable to outbursts of temper. They are generally of an affectionate but jealous disposition. The symptoms of cretinism may exist at birth, but as a rule they do not appear until the child is six months of age.

Endemic goitre occurs in districts where cretinism prevails, and the knowledge of this fact gave rise to the idea that cretinism might depend upon disease of the thyroid gland. Professor Kocher called the attention of the profession to the fact that in persons upon whom the operation of thyroidectomy had been performed all the symptoms resembling those of cretinism took place.

It has only been within the past few years that the connection between cretinism and myxœdema has been recognized. Sir William Gull seems to have suspected this relationship when he wrote, in 1873, on "A Cretinoid State Supervening in Adult Life in Women;" but later, in the report of the Clinical Society of London on myxœdema, in 1888, Ord, who wrote the final report, states that "there is strong evidence that myxœdema, sporadic cretinism, endemic cretinism, cachexia strumipriva, and the operative myxœdema of animals are several species of one genus, and that such clinical differences as exist between them are due to causes already sufficiently set forth, and that the one pathological fact common to all of these conditions is the occurrence of morbid processes, or of operations involving the annihilation of the function of the thyroid body." From the condition of the bones and the late cutting of the teeth, it is evident that the disease is

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<sup>1</sup> *Cyclopædia of the Diseases of Children*, vol. ii., p. 280.



allied to rickets. Barlow has reported cases of foetal rachitis which are much like sporadic cretinism.

The treatment of cretinism has been most unsatisfactory; indeed, the disease has been regarded as incurable, and susceptible of but little help. So recently as 1890, Bury<sup>1</sup> says, "When fully developed, cretinism is incurable, but is capable of amelioration by suitable treatment." He advises that cretin children should be placed in asylums for the feeble-minded, and recommends cod-liver oil, tonics, and open air.

The fact having been established of the pathological identity between cretinism and myxœdema, the next step forward was in its treatment. The extraordinary results which were obtained in the treatment of myxœdema by the ingestion of the thyroid gland of animals, which certainly constituted an era in therapeutics, made it seem probable that the same measure would prove useful in cretinism. As is well known, the raw thyroid gland of the sheep was originally employed by Murray, but since then it has been found that an extract of the gland could be used which is equally successful in its result and much less unpleasant to take. A dry extract of the gland is generally employed, but a glycerin extract is also used. The latter has the disadvantage of being rather more expensive than the desiccated extract.

The following case has been treated with thyroid extract, and the results are so remarkably satisfactory that it seems worthy of being placed on record. Isabella McG. was born June 16, 1890. The mother is thirty-two years of age and is healthy; the father is forty, a vigorous man, and has always been temperate. There is no history of hereditary disease on either side, except that several deaths from consumption have occurred in the father's family. She was brought to the Orthopædic Hospital and Infirmary for Nervous Diseases, Out-Patient Department, July 3, 1893. She is one of four children, the eldest of whom died at two years of age; the child was injured in delivery, and was idiotic. The second child is eleven years of age, and the third is six. Both of these children are strong and healthy.

The patient was born at full term, but the labor was difficult, owing to the very large size of the child, who weighed, according to the opinion of the physician in attendance, fourteen pounds. Forceps were used in delivery, but no external injury was sustained. She was healthy until six months of age, when she had catarrhal bronchitis. She had no intestinal or stomach trouble, and was breast-fed, but was given, in addition to the mother's milk, arrow-root, corn-starch, and other food after the age of four months. When six months old, the mother noticed that she was not as bright as other children; she never has been able to walk and has never attempted to creep. She never had convulsions, and has always been a quiet but high-tempered child. In attempting to stand by chairs, or to walk, the child

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<sup>1</sup> Loc. cit.

would frequently have falls, and she almost always struck on the back of the head, after which she turned white and vomited. Her first tooth was cut at twenty-one months.

*Condition on Examination.*—The child is three years and one month old. She is unable to walk, except when held by both arms. She cannot talk, and apparently does not hear. She sees, but is listless and does not notice things about her. She is pale and anæmic; the head is square and rachitic, flattened anteriorly and posteriorly. The occipital bone is very prominent and seems like a wedge between the parietal bones. The anterior fontanelle is open and large. The diameters of the head are as follows:

Bifrontal .....	10.5 centimetres.
Biparietal.....	13 “
Occipito-frontal .....	17.3 “
Circumference.....	50 “

The thyroid gland cannot be felt. The patient has twelve teeth,—eight incisors, and two upper and two lower molars. The chest is rachitic, and the abdomen large and distended. There is a marked antero-posterior curvature. The face is puffy and swollen under the eyes, the lips are thick, and the lower lip pendulous. The general appearance is so markedly myxœdematous that one of my assistants remarked the striking resemblance of the child to a case of sporadic cretinism in the Philadelphia Hospital, which is well known to the profession here. The patient was ordered cod-liver oil and elixir of cascara for obstinate constipation. (Figs. 1 and 2.)

The patient took cod-liver oil quite steadily for four months, at the end of which time it was noticed that there was but little change in her condition. She was not brought to the hospital for several months, and when seen again, March 19, 1894, the following notes of the child's condition were made:

The patient is more myxœdematous than formerly. The tongue is large and thick and protrudes from the mouth the greater part of the time. There seems to be some difficulty in swallowing. The tibiæ are much bowed. The anterior curvature in the lumbar region of the spine is more conspicuous. The skin of the whole surface looks thick and œdematous, and is dry and wrinkled. At the ankles the skin is thrown into folds, as is shown very well in Fig. 2. The soles of the feet are dry and wrinkled. All the epiphyses are large. The height of the child is thirty and two-eighths inches, and her weight twenty-six and one-half pounds. There is but little perspiration. There is some puffing under the eyes. The bridge of the nose is wide and flat.<sup>1</sup> The hair is exceedingly coarse and thin, and the scalp is smooth and shiny. In some places the scalp is

<sup>1</sup> The child's appearance answers well the description of Bury: “The eyes are wide apart and set, as it were, in the ends of a transverse gutter, the middle of which takes the place of the bridge of the nose,—the end of the nose broad and upturned.”



quite bare. The teeth are small and rudimentary, and have not increased in number since the last note. Three of the teeth are decayed, and four are imperfectly erupted. The anterior fontanelle is still open and depressed. It measures one and a half by three-eighths of an inch. The diameters of the head are—

Biparietal.....	13 $\frac{3}{8}$ centimetres.
Occipito-frontal .....	18 $\frac{1}{2}$ “

She was ordered ten drops of a glycerin extract of the thyroid gland, so prepared that a fluidrachm represented one-half of a sheep's thyroid.

On April 23 the patient was ordered twenty drops of the extract three times a day.

On May 9 the child does not seem so well, her appetite is not good, and she is weak. The thyroid extract was then discontinued, and the treatment by cod-liver oil renewed.

As some untoward effects have followed thyroid feeding, I felt unwilling to push the remedy until I could have the child under immediate observation, and she was therefore admitted to the hospital on May 14, 1894. The thyroid extract was administered in varying doses, according to the condition of the patient. The glycerin extract was given part of the time and a desiccated extract was employed at other times. A daily record of the temperature was kept, and if the thermometer registered 100° F. or higher the thyroid extract was omitted until the temperature had fallen to normal. On several occasions the temperature rose to 102° without any apparent cause, unless it was attributable to the effects of the thyroid extract. The highest temperature reached was 102 $\frac{3}{8}$ °. There were long periods in which for days the temperature was subnormal, the lowest having been 96 $\frac{2}{8}$ °. Cod-liver oil has been given continuously, and easily digested food in the form of milk and beef juice has been the principal diet. The child has made very striking improvement in every respect, and Figs. 3 and 4 show, I think, very distinctly the change in the condition of the patient which has taken place in the past four months. She has improved not only physically, but mentally. She is much brighter and better tempered, and is beginning to understand quite readily anything that is said to her. Her attempts at articulation are not very satisfactory, and her vocabulary consists principally of “I won't” and “Go away.” She is of an affectionate disposition, and is much attached to the nurse who has immediate charge of her. Her height is now thirty-two and a half inches, which is a gain of two inches since her admission to the hospital; and she weighs twenty-nine pounds, a gain of two and a half pounds.

One of the most striking changes which has taken place in the child is the improvement in the quality and quantity of her hair. The head is now thickly covered with soft curly hair, and the scalp appears to be in a healthy condition. The face is much less puffy, and the tongue is kept

within the teeth. There is less swelling of the lips. The myxœdematous condition of the skin has disappeared to a great extent, and the folds of loose skin about the joints—more especially the ankle-joints—have disappeared. There is undoubtedly great room for improvement, and, of course, it is a question as to how far the gain will extend in a case like this.

Dr. J. L. Gibson<sup>1</sup> writes of a case of sporadic cretinism in a male which he saw at two years of age, and which was again brought to him at the ages of four and six years. He speaks of the marked progress of the disease during the four years, and this is well shown in photographs taken at two, four, and six years. After transplanting both lobes of a lamb's thyroid into the pectoral muscle, he says, the improvement was immediate, and continued for about three months, when it practically ceased.

After a second grafting, this time into the peritoneal cavity, the improvement again began, and at the end of four months nearly all the cretinoid symptoms had disappeared.

Dr. Affleck<sup>2</sup> showed a case of cretinism, in a man, to the Edinburgh Medico-Chirurgical Society, in which three implantations of thyroid gland had been made, and he noted great improvement in a short time.

Dr. W. W. Ord<sup>3</sup> gives an account of the treatment of four cases of sporadic cretinism with thyroid gland. Case I. was a female six and a half years of age. In 1892 she had a small piece of human thyroid implanted under the pectoral muscle. There was great improvement for a few weeks, but this stopped after the absorption of the gland. In 1893 she was again placed on the thyroid treatment, now by feeding the raw pounded gland, and after a few weeks by giving a powdered extract. In a week improvement was again noted, and showed in the skin, hair, and general nutrition. She gained about one-half pound in weight per week. In three months she stood alone, and soon began to walk and talk.

Case II. was a male three years old. He was both mentally and physically deficient. He advanced rapidly under the same treatment. He had gained one and a half pounds in a short time, the growth still continuing, and soon became as intelligent as other children of his age.

Case III. was a male nine years of age. He had the general symptoms, and a remarkably enlarged tongue. His treatment was a five-grain tablet of an extract of thyroid once daily. The swelling of the tongue disappeared in two weeks, and the nutritive and intellectual growth was rapid.

Case IV. was a male of nine years. With the same treatment he lost weight at first, and then gained rapidly. He grew one and a half inches in four months.

Dr. Patterson<sup>4</sup> gives an account of a male patient, nineteen months old, in whom there had not been any growth in the last eight months. He

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<sup>1</sup> British Medical Journal, 1893.

<sup>2</sup> Ibid.

<sup>3</sup> Lancet, London, 1893.

<sup>4</sup> Ibid.



noticed improvement in the expression of the face and in the size of the tongue after the third dose of a thyroid extract, of which ten grains were given daily. In one month there was general improvement, with signs of teething, and at the end of eight months he had sixteen teeth, tried to walk, and could speak a few words.

Dr. J. E. Hellier<sup>1</sup> treated for one year a female, two and a half years old, who was suffering from sporadic cretinism and rickets, with cod-liver oil, iron, arsenic, etc., without any change being noticed, except the cutting of four incisor teeth. A half drachm of a thyroid extract three times weekly being substituted, she at once changed in appearance. In one month the cheeks and eyelids were much less swollen and the tongue was smaller. In four months no œdema was noticed, she looked much brighter, had twelve teeth, and tried to talk.

Dr. Carmichael,<sup>2</sup> reports a case of cretinism treated by hypodermic injection of thyroid gland and by feeding with the same substance. In this case the development was slow from birth,—rate of growth only one inch per year. Although eight years old, she looked like an infant. The skin, hair, and features were those of a typical cretin. She did not attempt to walk, and the intelligence was poor. The treatment was begun with a hypodermic injection of ten minims of thyroid extract twice weekly; but, on account of irritability and sleeplessness, the injections were reduced to ten minims weekly; then every other week; and, finally, three or four weeks intervened. After six months of this treatment, the raw gland, one lobe weekly, was given her for three months. The general appearance changed completely after the first few injections. In a few weeks the size of the abdomen had been reduced four or five inches in circumference, and the skin and hair were more healthy. In nine months she could walk, had grown four inches, and was much more intelligent.

Dr. A. J. Wood<sup>3</sup> speaks of a female twenty-three months old. She had stopped growing at seven months, and stopped creeping at nineteen months, which she had begun at twelve months. Her features were thick, the tongue protruded, and the hair was coarse; her height was twenty-six and one-eighth inches, and weight twenty-one and a half pounds.

A single lobe of a thyroid was planted under the breast. During convalescence from the operation, she began to crawl again, and the skin and hair began to change. She was afterwards fed on lamb's thyroids. In ten months from the time treatment was begun she had grown one and seven-eighths inches and gained two pounds.

Bramwell<sup>4</sup> cites a case, a female, sixteen and a half years old, who looked not older than a child of two and a half years. She was but twenty-nine and a half inches in height, and had very little mental development.

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<sup>1</sup> *Lancet*, London, 1893.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Australia Medical Journal*, 1893.

<sup>4</sup> *British Medical Journal*, 1894.

The treatment here was five minims of a thyroid extract once daily. In eight days there was a difference noted in the swelling of the face, lips, and tongue, and she noticed surrounding objects. In seventeen days she had lost three and a half pounds, and now there was very little œdema left. At the end of six months the skin and hair had changed; she looked two or three years older; had grown six and a half inches, and was very much more intelligent.

Railton and Smith<sup>1</sup> give the histories of two brothers, fourteen years and six years respectively.

The older boy had been under observation for two years; and Railton says the same description answered then as formerly, except a growth of three-fourths of an inch and an increase in weight of two pounds. With the raw thyroid and later with the powdered extract he improved at once, gaining both mentally and physically. In one month he had increased one inch in height, but lost in weight; but in one year he had gained the loss in weight and also four inches in height, with a corresponding mental gain.

The younger, whose history is given by Smith, was noticed to be mentally deficient at two years: he did not walk until two and a half years; and had other symptoms that were characteristic. He was treated with minced, fresh thyroid gland, one-eighth of a lobe, twice weekly. The improvement continued while the gland was given, which was for three months. When treatment was stopped for two months, the condition began to return; and when the child had been once more placed on the thyroid, an extract now being given, he improved so rapidly that in five months there were but few signs of the cretinoid condition remaining.

Dr. J. Thomson<sup>2</sup> records the following improvement in a male of nineteen years. His early development had been slow. He was but thirty-three and a half inches in height, and had grown very little since five years old. His mental condition was not so good as at five years. He was given one-quarter of a sheep's thyroid twice weekly, and this was cut down after a few months. In two months the swelling, skin, and hair had improved, and he had grown two inches. The result of a year's treatment was a growth of four and three-eighths inches in height, an increase in mental power, better health, and more natural appearance.

Dr. Murrell<sup>3</sup> reports the case of H. T. Butlin, treated by injections into the thigh. Ten minims of a thyroid extract were injected twice a week for one month, and then one-sixteenth of a gland was made into a pulp and given twice weekly. The latter was gradually increased to one-half a gland. The patient was a male, thirteen and a half years old, thirty-eight inches in height, and weighed forty-two pounds. From the age of five to thirteen and a half years he had grown but six inches; while during

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<sup>1</sup> British Medical Journal, 1894.

<sup>2</sup> Edinburgh Medical Journal, 1893.

<sup>3</sup> St. Bartholomew's Hospital Report, 1893.



eleven months of treatment he grew four inches, gained six pounds in weight, and improved mentally.

Dr. G. E. Anson<sup>1</sup> relates the following study of another cretin, a female, ten years old, forty-two inches high, and with other symptoms, who had grown but two inches in three years. She took a glycerin extract. In fifty-five days she had grown one and a quarter inches, and in one year four inches, or double the gain of the three previous years. The skin, hair, and general appearance had become those of a normal child.

Vermehren<sup>2</sup> used a powder precipitated from a glycerin extract of thyroid; and Robin<sup>3</sup> gave injections of the juice of sheep's thyroid, both with good results.

Dr. George W. Crary<sup>4</sup> relates a case of a child of five years, a female, who weighed eight pounds at birth, and seemed normal in every respect until she was six months of age. It was then noticed that she had ceased to grow, and was losing weight. When examined, at the age of five years, she was not larger than a ten months' infant. The symptoms of myxœdema were very conspicuous. Her disposition was good, but she had a very slight degree of intelligence, and paid very little attention to noises, or to even bright light. The temperature ranged between 97° and 98° F. She was given an extract of thyroid gland, and improvement began almost at once. At the end of six weeks, when the report was made, the child was much brighter mentally, and the œdematous swelling of the face and body was markedly reduced.

It is too short a time since the introduction of thyroid feeding in cretinism to form any opinion as to what the final results will be in such cases. Some observers state that cases improve to a certain point, and then remain stationary; but there is no doubt that in all the cases which have been reported remarkable changes for the better have taken place which have fully equalled, if they have not exceeded, those which have occurred in my patient. Even if no greater gain can be made than has been recorded in my patient and in those cases which I have quoted, we have every reason to rejoice in possessing a remedy which will accomplish as much as has been done with thyroid extract.

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<sup>1</sup> Lancet, London, 1894.

<sup>2</sup> Deutsche medicinische Wochenschrift, 1893.

<sup>3</sup> Lyon Médical, 1892.

<sup>4</sup> American Journal of the Medical Sciences, May, 1894.













# INTERNATIONAL MEDICAL MAGAZINE.

AN  
ILLUSTRATED MONTHLY  
DEVOTED TO  
MEDICAL AND SURGICAL  
SCIENCE.

EDITED, UNDER THE SUPERVISION OF

JOHN ASHHURST, JR., M.D., AND JAS. T. WHITTAKER, M.D., LL.D.,

BY

HENRY W. CATTELL, A.M., M.D.

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