

on the fourth and fifth toes of the right foot. In trimming back the plaster another slough was produced. The toe sloughs have healed up and the last one is almost healed. There is no return of movement yet in the toes or in the ankle, but a peculiar resistance suggesting beginning tonicidity seems to be developing on the surface of the dorsum. At this place, when she is told to attempt movement, a faint twitching is sometimes noticed.

Dec. 2, sloughs have healed. No movement has returned. Tickling and pin pricks are certainly perceptible. Braces tried on.

Jan. 5, 1911, child wearing braces which seem to fit properly. She has no power in motion yet in the right foot. The four outer toes show some swelling and some blueness. Patient stood upon her feet and stands alone. To try a few steps.

Jan. 11, child steps very well on her feet with the braces on. No motion has come into the foot. There is now a peculiar reflex, namely, flexing the ankle causes flexion of the knee and hip. Sensation has returned well, the child feeling sharp objects distinctly.

Jan. 18, distinct motion noted in dorsal flexion. With tickling of the foot she bends her ankle up and outward a few degrees and usually flexes the four outer toes a little. After the foot comes up it goes back into a right angle, but it cannot be stated whether that is due to the elasticity of the tissues or to contraction of the soleus. Child walking a little. Measurements of calves, right,  $6\frac{1}{2}$  inches; left,  $6\frac{1}{2}$  inches.

Jan. 25, foot to-day shows a distinct improvement. She has very slight motion in plantar flexion. She has slight motion in inversion. She everts quite well and she can both flex and extend the toes. There is also noticeable a peculiar blueness of the anterior part of the foot, extending from the ends of the toes to about 2 inches back to a line where the blueness stops rather suddenly.

Feb. 7, some improvement. She now bends her ankle downwards. This movement is over an arc of  $10^\circ$ . She moves it upwards about  $10^\circ$ , inwards a few degrees and outward about  $20^\circ$ . Her toes can be moved upward and downward. Compared with her condition before the operation she has all the motions of the ankle and foot, and the total amount represented is about the strength represented in the tibialis anticus before the operation. At the present time the tibialis anticus does not stand out, out of proportion to the other muscles. The color in the front part of the foot is much like normal, the blueness having disappeared.

Feb. 16, case brought into the experimental laboratory and the electrical tests tried. The skin, however, was very sensitive so that the tests had to be postponed. Motion tested again. She can evert, plantar flex, and dorsal flex about  $15^\circ$ . Inversion is less. Circumference of calf,  $6\frac{1}{4}$  inches.

In presenting this case only the facts are submitted and no definite conclusions are as yet to be drawn. One thing may, however, be stated with reasonable assurance, namely, that the control of the patient's ankle is now different from what it was before the nerve fusion, although the total amount of power is as yet no greater. A final verdict can only be given when she reaches that stage where no further improvement is going on, when a supplementary report of the case will be made.

In closing, I wish to acknowledge the important assistance which has been rendered to me by Prof. Geo. N. Stewart, director of the laboratory,

and Dr. Marine, also of the laboratory. The former has made many valuable suggestions in the physiology of the research, and the latter has done the same from the anatomical point of view.

## A CASE OF HEMIATROPHY FROM SCLERODERMA.\*

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WHILE a moderate amount of asymmetry between the two halves of the body is an ordinary condition, the more extreme degrees, an actual hemiatrophy, are comparatively rare. Congenital hemiatrophy, as a rule, is due to some malformation or defective development of one half the brain occurring in fetal life. Acquired hemiatrophy, which is far more common, is generally due to some cerebral lesion occurring in childhood and is ordinarily associated with infantile hemiplegia. It may also happen that anterior poliomyelitis affects the arm and leg on one side, giving rise to a partial hemiatrophy, but this is rare.

Probably the rarest form of hemiatrophy is that associated with scleroderma, of which I have been able to find only six reported cases. It seems justifiable, therefore, to present this additional case, which is, so far as I know, the only one reported in this country.

David B., aged eighteen, single, a native of Boston, presented himself at the neurological service of the City Hospital in April, 1907. Except for a little "rheumatism" on the father's side, the family history was not remarkable. He had always been well, except for measles and scarlet fever in childhood. He had never used alcohol or tobacco and denied any venereal disease.

He had worked for two years as a metal-worker, handling tin and sheet-iron, but not lead. Two years before coming to the hospital he had had some sharp paroxysmal pain in the left leg, followed by spasmodic clonic contractions of the muscles of the thigh and slowly progressive wasting of the whole leg. At about the same time he noticed some pigmented nodules in the skin on the left side of the epigastrium, on the anterior aspect of the upper third of the left thigh, just below the knee and along the lower inner border of the gastrocnemius. For six months he had had some "drawing" sensations and spasm near the sternal attachment of the abdominal muscles, and for two weeks some spasm and weakness in the left upper arm, especially in the biceps. The left leg had grown progressively weaker. Except for the symptoms above noted, however, he was in good health and able to work regularly. Occasionally, if he kept one position too long or worked in a cramped position, the leg would give out for a few minutes. There was no headache, vertigo or visual disturbance. He slept

\* Case presented at the joint meeting of the New York and Philadelphia Neurological Societies with the Boston Society of Psychiatry and Neurology at Boston, Nov. 23, 1907, and at a clinical meeting of the Neurological Section of the Royal Society of Medicine in London, Dec. 15, 1910.

well and showed no mental peculiarities. There were no disturbances of respiration or circulation; the appetite and digestion were good; micturition was normal and the sexual apparatus was not affected. He had noticed no difference in sweating.

On examination, the noteworthy feature was a wasting of the left half of the body. This was not very noticeable in the face, which showed only a moderate asymmetry, such as is often seen, but it was evident in the arm and very marked in the leg. There was also some shortening of the leg, causing a slight inequality in the gait and leading to a slight compensatory tilting of the pelvis and lateral curvature of the spine, and a tilting of the shoulder-girdle in the opposite direction. The left scapula was rotated upwards and outwards in the "angel-wing" position. There was a band of atrophy over the lower ribs, from the fifth to the tenth, apparently involving both skin and muscles and leading to a thinning of the chest wall, so that the pulsations of the heart were very noticeable. This did not extend back of the anterior axillary line. There was much wasting of the muscles, as shown by the greater prominence of the bones about the hip and knee. The left side of the glans penis seemed somewhat smaller. The following measurements,

	Right.	Left.
Semicircumference of head,	25 cm.	24 cm.
Semicircumference of chest,	37.5 cm.	36 cm.
Acromion to olecranon,	38 cm.	38 cm.
Circumference upper arm,	25 cm.	23.5 cm.
Length of ulna,	25.5 cm.	25.5 cm.
Circumference fore-arm,	23.5 cm.	21.5 cm.
Circumference wrist,	16.5 cm.	16 cm.
Circumference knuckles,	21 cm.	21 cm.
Anterior superior spine to internal malleolus,	88 cm.	85 cm.
Circumference thigh,	44 cm.	35 cm.
Circumference calf,	32 cm.	25.5 cm.
Circumference foot,	22 cm.	21.5 cm.

The skin upon the left side of the body was thinner, smoother and more translucent. The condition varied and was most marked over the thigh and over the atrophied region of the chest



FIG. 1.

together with the photographs (Fig. 1), will show the degree of atrophy, and the wasting of the chest wall:

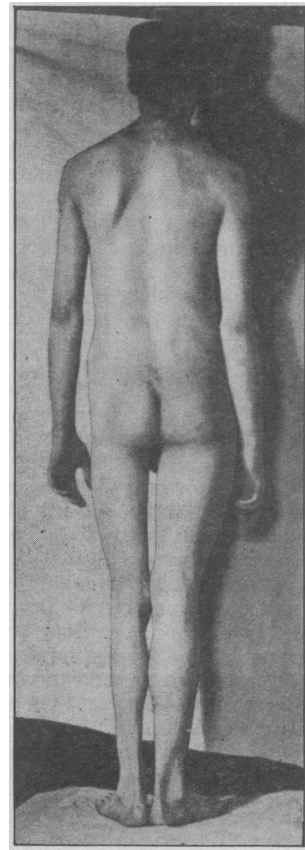


FIG. 1.

wall. The superficial veins were very apparent and there was very little hair upon the left leg, and less hair over the entire half of the body, even on the left half of the pubes and in the left axilla. The skin was not adherent to the subjacent parts and did not seem to compress them, being fairly elastic. The loss of hair is shown in the photographs, and the patient himself had noted that it had gradually diminished, being formerly as thick as on the right side. In the regions mentioned in the history and indicated

in the diagram (Fig. 2) were a few firm, slightly elevated nodules, brownish-yellow in color, coalescing into a broad, flat mass and freely movable with the skin, of which they seemed to form a part. A few dilated capillaries were seen about them. The patch in the epigastrium was about 10 cm. in diameter, and that on the thigh 10 cm. long by 2 wide. Dr. C. J. White, who kindly examined them, pronounced them scleroderma.

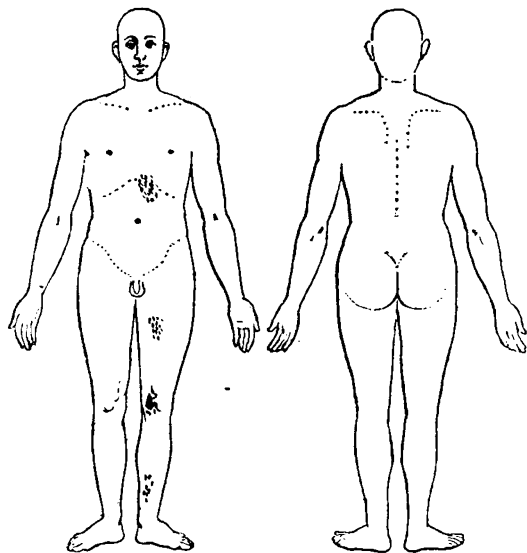


FIG. 2. Distribution of the sclerodermatous patches. April, 1907.

The various movements were performed normally, except that the movements of the left arm and leg were decidedly weaker than those of the right. There was a slight twitching of the lips and tongue, but no hemiatrophy of the tongue. As he stood there were single, quick contractions of the left quadriceps every few seconds which drew up the patella. On electrical testing the muscles on the left side responded more quickly and to a weaker current than the muscles on the right, which I attributed to the greater thinness of the skin. No tests of the electrical resistance, however, were made. Sensation for light contact and vibration ( $C^2$ , 512 per second) was subjectively a trifle plainer on the left side, but the lightest touch could be felt on the right, and no difference was noted for sensations of heat, cold or pain. The abdominal reflex was livelier on the right side; the plantar, cremasteric and gluteal reflexes on the left; the plantar reflex was of the flexor type. The right knee-jerk was a trifle greater than the left and there was a patellar twitch on that side; the ankle-jerks were equal.

The pupils were equal and regular and reacted to light and accommodation, but the left pupil reacted somewhat sluggishly. The vision in each eye was 20-15. The visual fields and eye-grounds were normal. There was a spur in the left nostril and an enlarged lower turbinate, but the pharynx and larynx were symmetrical and normal. Examination of the hearing and ears showed nothing remarkable. Examination of the

lungs showed normal resonance and respiration. The heart was not enlarged and there were no adventitious murmurs, but the apex-beat, as already mentioned, was very noticeable. The pressure was 127 mm. in the right arm and 121 mm. in the left (wide cuff). The blood-count showed 6,200,000 red and 4,600 white on the right, 5,000 white on the left. Hemoglobin, 95. Stained specimens, normal. Urine 1,025, acid, no albumen or sugar; sediment, calcic oxalate crystals, a few uric acid crystals and an occasional leucocyte. A skiagraph showed no noticeable difference in the bones of the leg, in spite of the shortening.

Under galvanism and thyreoid extract (gr. iii-vi, t.i.d.) he showed some improvement. The drawing sensations disappeared, the twitching became much less and his general strength improved. The Röntgen-ray and the high-frequency current were substituted for galvanism later. He has felt well and kept constantly at work. After some months, however, another small sclerodermatous patch appeared to the left of the median line and half way between the xiphoid cartilage and the umbilicus, and the other patches have grown larger. The atrophy has also increased a little both actually and relatively to the other side.

A careful search through the literature of the subject has revealed six other cases of complete hemiatrophy and two of partial hemiatrophy which I will cite briefly:

1. Takács. Man, thirty-two. Family history negative. Always subject to headaches. Two and a half years earlier he began to have tearing pains in the right arm and leg, with some weakness. There was a feeling of tension in the right lower leg. He also noticed that he no longer sweated on that side. The whole right side was smaller, the right eye more deeply set, the right pupil and the right palpebral opening smaller. The right side of the thorax was flatter, and the fingers of the right hand somewhat contracted. The right upper arm was 2 cm. and the right forearm  $4\frac{1}{2}$  cm. smaller. The leg was  $2\frac{1}{2}$  cm. smaller. The skin on the right side of the face and the back of the right hand was thinner. Sensation and electrical reactions were normal. The trouble was attributed to vasomotor changes.

2. Henschen. Man, forty-six. Family and previous histories unimportant. At the age of fourteen he sprained his left ankle slightly; some time after he had erysipelas in that leg, after which ulcers appeared from time to time on both legs. From this time on he began to have prickling and pain in the left half of the body. Six months later he had severe migraine and changes in the trunk and extremities on the left side, which, after another six months, involved the face. Otherwise he was in good health. At the time of observation there was a marked atrophy of the left face, involving the maxillary bones, extreme atrophy of the left arm and leg, and slight atrophy of the left side of the trunk, which was much greater in certain areas, notably on the lower ribs. In the arm the muscles had wasted very markedly and the bones were

shortened. In the leg the muscles had almost disappeared. The skin on the atrophied areas was very thin, pigmented, smooth and shiny like parchment, and in some places adherent to the bone. The hair and the sweat glands had disappeared. Some of the articulations were ankylosed and the muscular strength was greatly impaired. Cutaneous sensibility was normal except that the affected leg was somewhat more sensitive to cold and electricity. At times there were fibrillary twitchings in the muscles of the affected regions.

3. Steven. Woman, twenty-four. Family and previous histories negative. Eleven years before there was noticed a patch of hardened skin in the right groin and the right hand was swollen and stiff. Similar patches appeared on other parts of the skin and finally on the right temple. A year later the skin ulcerated in various places and then cicatrized. This ulceration lasted three or four years and recurred toward the end of life. At the age of twenty-one an atrophy of the right side of the face and of the right half of the body was observed. Three years later there was marked atrophy of the face, especially of the forehead and chin, and the skin had a brownish, parchment-like appearance. There was marked wasting and contracture of the arm, with claw hand and fibrous ankylosis at the elbow. The arm was  $2\frac{1}{4}$  inches smaller round, there was little motion, and the skin was tightly bound, showing the brownish, parchment-like character with many depressed cicatrices, pink, shiny and with radiating capillaries. The right breast was smaller, and the skin over the abdomen was hide-bound, brownish and parchment-like, with atrophy of the underlying tissue. There was a similar atrophy in the leg, with contractures and changes in the skin. Sensation was normal and she could walk fairly well. About a year later she died as a result of an operation for ovarian tumor. The left motor cortex was somewhat thinner macroscopically. The right anterior horn of the cord was less in size, the motor cells were somewhat degenerated, the neuroglia less dense, and there were perivascular changes in the cord, medulla and pons. There were also degenerated nerve fibers in the cervical and lumbar plexuses.

4. Lunz. Woman, twenty-six. Family and previous histories negative. Some exposure to wet and cold. Paroxysmal dull pain in the right leg for nine years, increasing in severity and duration and followed by wasting. Seven years before, when nursing a child, she noticed that the right breast was smaller and secreted less. For three years wasting of the left cheek with some pain. Pain in the back and limbs for a year. Circumscribed atrophy of the skin, subcutaneous tissue and muscles in the second division of the left fifth nerve. Similar atrophy on the right side, increasing from the trunk downwards. Sensation, motion and electrical reactions normal. Some vasomotor symptoms with coldness and livid pallor of the skin of the lower extremities. The trouble was regarded as neuritis migrans.

5. Pelizaeus. Girl, five and three-quarters. Family and previous histories negative. Injury to head without serious results. Fifteen months before the child began to limp and used the left leg less. For ten months disturbances had been noticed in the skin of the left leg, which gradually increased. The left arm and hand also grew stiff and wasted and stripes were noticed in the skin of the forearm; these stripes were hard and thick and in some places sunken and adherent. The left arm was shorter and smaller and the fingers somewhat contracted. The leg was also wasted and there was some contracture; some of the muscles in the leg were harder and firmer. Changes were noticed in the skin of the leg similar to those in the arm, and there was also some brownish pigmentation. There were no changes in the sensibility or the electrical reactions.

6. Torday. Boy, thirteen. At the age of six right hand became swollen and there was noticed a strip of skin about two fingers in width along the whole right arm which was elevated, paler and harder. There was no pain, but the fingers became thinner and were somewhat flexed. Three years later the right half of the face began to atrophy and for six months there had been noticeable atrophy of the right half of the body. The face showed much hemiatrophy, most marked in the upper lip, the ala nasi, the tongue and the gums. There was atrophy of the right side of the neck and shoulder, the right thorax was flatter and the ribs wider apart. The skin was somewhat darker and the veins visible. The right forearm was 2 to 3 cm. smaller, the hand wasted, the fingers less movable, and the skin very thin, harder and less elastic. On the forearm could be seen some shiny, thickened stripes, transversely wrinkled. The right pelvis was a trifle smaller, the right leg a centimeter shorter and somewhat smaller. The gait was normal, but he had little use of the right arm. There was hemiatrophy of the penis, most noticeable in the glans. There was no reaction of degeneration.

In addition to these six cases I have found two more where the atrophy was partial, but which have been only very briefly reported. The first is cited by Oppenheim, a case of facial hemiatrophy with circumscribed wasting of the soft parts and bones over the back, and hemiatrophy and simple muscular atrophy, without weakness or electrical changes, in the whole right leg. The second case is reported by Osler, of a boy of fifteen, who had a progressive disability of the left arm with wasting of the arm. The scapula and right hand were smaller, the bones were smaller, and the arm was an inch shorter. The skin was sclerosed, hide-bound and pigmented.

Oppenheim also refers to certain cases published by Raymond and Sicard in the *Revue Neurologique* for 1902 (x, 593), of progressive wasting of the arm or leg. Two of these cases were brother and sister. The skin was somewhat wasted, but Dr. Sicard informs me that the skin was smooth in aspect, with a very limited atrophy and not a real scleroderma.

Muscular wasting is a more or less frequent accompaniment of scleroderma. Lewin and Heller, in an analysis of 508 cases, have found it present in only 26; but Hutchinson asserts that it is rarely absent, and Thibierge claims that there is always a certain degree of atrophy except in the mild cases and in those developing in later life. This atrophy he regards as due in part to the enforced inactivity of the limbs and in part to the compression of the vessels and nerves leading to the muscles beneath the sclerodermic area. Méry and Jarisch have found that the sclerotic process may actually invade the muscle itself. The bones may also show some degree of atrophy. This atrophy of muscle and bone is usually most marked in the cases of circumscribed scleroderma, and the compression may be so great in sclerodactylia as to lead to the actual loss of one or more fingers. Much more rarely, however, there may be a primary atrophy of the muscles and bones, independent of any compression and even in parts where the skin is still unaffected (Jarisch, Robert, Thibierge).

In the case just reported, as well as in the cases of Takács, Lunz and Torday, the hypothesis of an atrophy from disuse or from compression seems hardly tenable. In my own case there were no noticeable changes in the skin of the arm, and the skin of the leg, although much wasted, had none of the "hide-bound" character capable of serious compression of the underlying parts. The curious atrophy of the chest wall, apparently very similar to that depicted in Henschen's case, extended beyond the sclerodermic area. The atrophy must, therefore, be regarded as in the main primary.

The cases of facial hemiatrophy present certain conditions analogous to those of general hemiatrophy. All the cases of general hemiatrophy, by the way, except my own and that of Pelizaeus, presented a well-marked facial hemiatrophy, although in Lunz's case the facial hemiatrophy was on the side opposite to the atrophy of the limbs (hemiatrophia cruciata). Volhard's case, although not one of hemiatrophy, is unique. This patient had a left facial hemiatrophy with a peculiar bronzing of the skin over the body in the left upper and right lower quadrants. From the fact that facial hemiatrophy is usually limited to the region supplied by the trigeminal nerve, that it is sometimes accompanied by other symptoms (pain, spasm of the masseters, etc.) indicative of disturbances of the nerve, and still more from the results of autopsy (Mendel<sup>1</sup>), which have shown lesions of the fifth nerve, the majority of neurologists have been disposed to regard it as a nervous affection, and many of the works on neurology class it among the diseases of the trigeminal nerve. The majority of dermatologists, however, are disposed to regard facial hemiatrophy merely as a special localization of circumscribed scleroderma, which not infrequently manifests itself in some special nerve area or possibly in the area of some of the spinal meta-

meres, an opinion which is endorsed by a few neurologists (Cassirer, Collins, Möbius). The most extreme case of facial hemiatrophy I have ever seen — more extreme by far than any depicted in the textbooks — is said to have begun with a patch of morphea on the cheek. Another case seen in its early stages showed merely a band of atrophy, involving the bone, about 4 cm. in width and extending on the left side of the forehead from the root of the nose to within an inch or two of the vertex. This began as a white spot, and the skin in that region was white, with red disk spots and sclerotic. There was some general wasting of the left face apart from the sclerotic area. A considerable number of reported cases of facial hemiatrophy have shown evidences of scleroderma on other parts of the body.

The atrophy, moreover, is not confined to the distribution of the trigeminal nerve. Setting aside the cases of bilateral facial atrophy, a few cases have presented atrophy in other parts of the body. Mendel's case had atrophy of the muscles supplied by the radial nerve on the same side, with degeneration of that nerve. In Debray's and Osler's cases the atrophy had involved the deltoid. I have not searched the literature of facial hemiatrophy to find further cases, but these with the five cases of general hemiatrophy and the two of partial atrophy where the face was also involved are sufficient to establish the fact.

A complete explanation of the hemiatrophy of scleroderma as well as of the circumscribed atrophies, whether of the face or of the body, that occur in this disease must wait until we acquire further knowledge as to the nature of scleroderma itself. Of the various hypotheses as to the nature of the disease, — the thyreoid, the infectious, the vascular and the neurotic, — the latter is perhaps the most probable, but whether, if it be a nervous affection, the disturbance be a gliosis, a lesion of the sympathetic, or an angiotrophoneurosis is a matter not yet removed from the unsatisfactory domain of speculative pathology. The lesions in the anterior horn found by Steven in the only case of sclerodermic hemiatrophy that has come to autopsy were not pronounced and may have been secondary, as Cassirer suggests, while the normal electrical reactions noted in most of the cases show that the changes in the anterior horn if constant, cannot be very marked.

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<sup>1</sup> No attempt has been made to compile a complete bibliography of scleroderma or facial hemiatrophy. A full bibliography of scleroderma may be found in the works of Cassirer and Lewin and Heller. I have tried to collect all the cases of general hemiatrophy in scleroderma.

<sup>1</sup> Homén's case, often cited as a case of facial hemiatrophy with autopsy, is rejected by Möbius.

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## THE TOWNS-LAMBERT TREATMENT FOR MORPHINISM AND ALCOHOLISM.

BY RICHARD C. CABOT, M.D., BOSTON.

My attention was first called to this treatment two years ago through talks with Dr. Alexander Lambert and Mr. Charles B. Towns, of New York.

I then went to New York and spent several days in Mr. Towns' private hospital, watching the progress of alcoholic and morphine cases at different times of the day and in different stages of their treatment. I was struck at once by the small amount of suffering undergone by these patients as compared with the much severer suffering with which I had been previously familiar in watching the results of withdrawing morphine either suddenly or gradually.

During this visit in New York I also watched the progress of a group of cases under the care of Dr. Alexander Lambert in Bellevue Hospital, and talked the matter out very thoroughly with him. I became convinced at that time that the immediate results of the treatment were remarkable and that its capacity to get a person free from all desire for morphine and alcohol with a comparatively small amount of discomfort made it valuable.

Soon after this visit I sent to the Charles B. Towns Hospital in New York a patient who had been taking morphine for about twenty years. This patient had at times taken as much as 20 gr. of morphine a day, and was just then taking 11 gr. a day. The habit had been previously broken four times, but the desire had not been abolished and the habit had always recurred after a short period. Under the Towns-Lambert treatment this patient was entirely free from the habit and from all desire for morphine in less than ten days. This was eighteen months ago, and there has been no recurrence nor any approach to a recurrence in that time. The patient has been well and happy and is now very actively employed. In this case the discomfort lasted only three days at the beginning of the treatment. At no time was this patient (nor any other whom I have watched) in any danger.

No one who has had any experience with the attempt to break the morphine habit could help being impressed by a case like this, but there still remained in my mind two unanswered questions: (1) Is it possible to accomplish results like this in any considerable proportion of all cases? and (2) How far was the cure just narrated

the result of the powerful personality of Mr. Charles B. Towns?

We all know that the psychical element is a considerable one in the treatment of all drug habits, and especially of alcoholism, though most of us, I think, believe that its influence is not very durable in the treatment of confirmed morphinists. Any one who knows Mr. Towns knows one of the most persuasive and dominating personalities in the world, and though I knew that Mr. Towns spent but little time with patients, I was anxious to find out whether the treatment could be carried out with equal success by any one else.

I was much interested, accordingly, in the establishment in November, 1910, of a hospital near Boston in which the same treatment is carried out under physicians who had been trained in the Towns Hospital, in New York. Any physician sending a patient to this hospital is invited to visit his patient frequently and to watch the treatment in all stages and in detail. Nothing whatever about it is secret. Although only six months have passed since the establishment of this institution, I have already seen results sufficient to confirm me in the belief that, aside from suggestion and any notable psychical impression, the treatment has great value, especially in the cure of the morphine habit, and that just as good results can be obtained here as in New York.

The great chance for moral influence over these patients is, I am convinced, after medicinal treatment has achieved an elimination of the craving for the drug. Before that one may waste his time and talk in vain.

Among the twenty-two cases of which I have records of treatment and of the after results, there are ten cases of morphinism, but one of which has relapsed. I prefer to speak at present only of these cases, details of which are given below. In our alcoholics there have been several relapses. Some we have not been able definitely to follow, but several cases have responded to the treatment with marked success. In regard to the value of the treatment in alcoholism, therefore, I have from my own observation as yet no definite opinion, though I feel much interested in it and shall carefully watch results.

Among our morphine cases, the longest period of freedom from symptoms or desire for the drug has been eighteen months (in the case mentioned above). There is also one of four and a half months, three of three and a half months, one of three months, two of two months, and two of one month. The results in these cases are the freedom from any desire for the drug and abstinence from its use.

Of course no one can say that these patients will never return to it, and no one asserts that the treatment gives the patient a new brain and nervous system or fundamentally changes the character which he possessed before he took up the habit.

I see no reason to believe that it is worth while to advise the treatment in cases where the essential diagnosis is *degeneracy*, with morphinism