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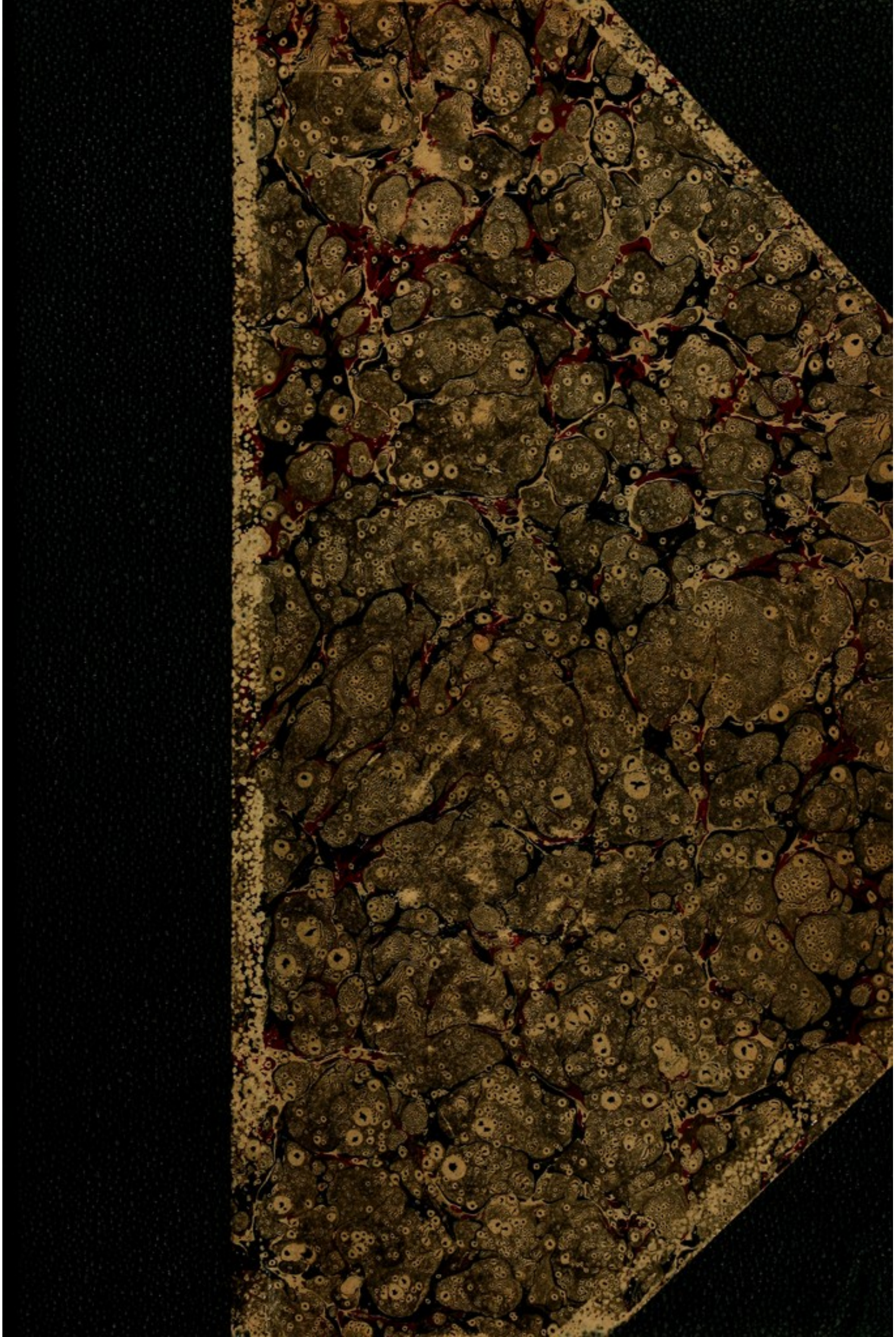

STUDIES IN

NEUROLOGICAL DIAGNOSIS

By

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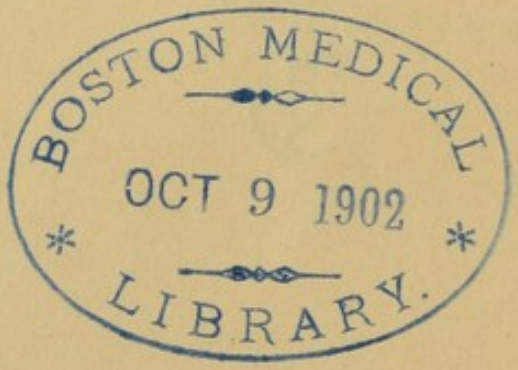


INDEX OF CASES.

PREFACE.

During the course of the past few years certain special experiments have been made for the purpose of securing the best methods of giving the third-year students a reasonable knowledge of neurology in the shortest possible time. Fortunately, that task has itself grown easier, of late years, for the reason that the importance of the subject has come to be better recognized by the profession and the students, and its closer study is approached with livelier interest. The teachers realize that this change of sentiment calls for fresh effort on their part, but they wish the students to realize in their turn that the teachers' duty consists only in showing how study and observation can be made effective, not how they can be dispensed with or abridged. The work of the class-room must be supplemented by work at home.

The neurological department of the Massachusetts General Hospital is very rich in interesting and important cases; and the plan of teaching first followed was to demonstrate large numbers of patients, the students being urged to ask and answer questions concerning them. But, while this method interested the abler and more ambitious men, it was not systematic enough for the whole number, and, consequently, about four years ago, the plan was tried of supplementing the demonstrations by a systematic quiz, based on the study of successive chapters of an accepted text-book. Printed lists of questions were also given out for the sake of calling attention to important points.

This plan found favor with the students, and might have been continued longer but for the fact that the present method, which was first definitely suggested by Dr. W. B.

Cannon,* in January, 1900, commended itself as preferable. Dr. Cannon called attention to the success which had attended the "case-system" of instruction in the Law School, and gave reasons for believing that something similar could be used with benefit for medical teaching. It was, of course, obvious from the first that there were distinct differences between the needs of the two schools. The law seeks to base itself on a relatively small number of precedents; while medicine progresses by the accumulation and comparison of large numbers of observations, differing, perhaps, but slightly from one another. Nevertheless, inasmuch as it is impossible to give each student a chance to observe great numbers of patients with due care and under due supervision, it was believed that this plan of discussing published cases, given out beforehand, possessed certain distinct advantages, and afforded a means of supplementing the clinical work which was of greater value than either didactic lectures or quizzes,— the more so that, throughout his professional life, every physician is called upon to read large numbers of cases published by his colleagues, and has great need of skill in seizing rapidly their salient points.

It soon became evident, however, that, if the case-system was to be adopted at all, it should be adopted exclusively. For, if text-book recitations were to be made an integral part of the instruction, many of the students would be only too glad to devote their energies to them as an easy means of packing the memory with facts learned by rote, and would fail to get the benefit which might be secured by a thorough immersion in the study of cases of disease.

This plan has now been in use for three years, and has been, each year, more rigorously followed. It is needless to say that at the same time the clinical section-work in this department, as in all the other departments of the school, has been systematized and increased to the fullest extent possible, and that it is relied upon as furnishing by far the most important means of instruction, so far as it goes.

* Boston *Medical and Surgical Journal*, Jan. 11 and May 31, 1900.

Every one who has employed this method of teaching must have found himself in face with the question, On what basis should the cases be selected, as illustrating the commoner types of disease or as affording problems for study? Experience and reflection have led us to favor the latter plan, though not to entire exclusion of the former.

To illustrate in any adequate degree even the simpler proposition of the text-books, by any such system as this, would be as impossible as it is unnecessary. The essential function of the case-method is to teach the students to think, to analyze, to convert pen-pictures into sense-pictures, and to utilize their books as works of reference. In pursuance of this idea we have not even tried to select simple or typical cases alone, but, rather, cases which call attention to points of special importance as regards diagnosis. In studying and discussing these, with the constant aid of text-book descriptions, the "types," so far as they exist, will, we believe, be learned incidentally and emphasized by contrast, and the student will be trained to make, as it were, his own text-book. The "cases" are intended purely as an aid to the study of the living problems presented in actual clinical work. They are to be regarded as a supplement to observation, but in no sense as a substitute for it.

The value of this method must always depend on the use that is made of it by the teacher; but any fairly well-equipped student can, we believe, make himself a master of the elements of neurology if, in addition to doing his clinical work, he will study this collection of cases, take part in the discussion of them in the class-room, and read his text-books in the light of the experience thus gained.

These histories are the records of real experiences, and our aim has been to write them out in such a way as to reproduce the impressions originally made on the examiner, and not in the form recommended in the lectures on "case-taking."

We have tried to make it possible for the student to picture to himself each patient's appearance and condition at the different stages of the examination, and to consider what provisional diagnoses would have suggested themselves to his mind as the interview proceeded, and what additional data would have been needed for justifying either one.

Frequently, a positive diagnosis may be impossible; but the reasons for this conclusion should then be clearly recognized, as well as the different possibilities toward which the various signs and symptoms point.

After the diagnosis has been made, two further tasks should be undertaken, so far as is practicable. First, the complete symptomatology of the disease which is assumed to be present (as recorded in a good handbook, supplemented by personal observation) should be rapidly run over, in order that it may be seen what symptoms are present and what symptoms are lacking, in the given case. Next, the features peculiar to each history — those which make it of especial interest — should receive attention.

In analyzing the cases, it is usually best to begin by studying the signs which point to the *localization* of the supposed lesions, irrespective of the clinical diagnosis, and, next, to consider the general trend of the symptoms taken as a whole, in the light of clinical information, inference, and experience. These two processes of investigation imply somewhat different sorts of knowledge and preparation. The first presupposes hardly more than a good acquaintance with the anatomy and physiology of the nervous system; the second cannot be followed successfully unless the examiner has acquired a familiarity with a variety of symptom-complexes, and the habit of recognizing quickly even the slighter indications of the various diseases,— their complexion and accent, as one might say,— just as one recognizes a family likeness. It is this habit that constitutes one of the chief powers of the skilful diagnostician, and the student will gain it more and more in proportion as he studies larger and

larger numbers of patients and trains himself to notice the *essential features* of the different disorders. It is not only the conscious recognition of the fact that a given case is essentially like or essentially unlike other cases which are recorded in memory or found in print, that must be trained and satisfied, but also the instinct of similarity and dissimilarity; and it must be remembered that the very existence and correctness of this trained instinct practically means that the various diseases themselves have marks which are distinctive and yet which have not been fully classified and described.

Many of the cases in this series are designedly given in an incomplete form, and the following suggestions are offered as an aid to further inquiry: —

1. Among the difficulties that present themselves to the student, one of the chief is that of distinguishing between the *structural* and the *functional* disorders,— a distinction of fundamental importance. To help in the overcoming of this difficulty, numerous cases of a "functional" sort have been introduced among those where organic or structural lesions were present, and *vice versâ*. The student is urged never to commit himself to a diagnosis without having considered with special care in which of these two great classes his case probably belongs, or whether it may not belong in both. Not infrequently a case may be partly "functional" and partly "organic" in nature; and the functional element may have come first, the organic disease only as a secondary result. On the other hand, even where an organic or structural lesion is the main cause of trouble, the symptoms may not be distinctively commensurate with the effects of the lesion, but due, rather, to a neurosis secondarily induced (as where a migraine previously "latent" has been brought out by disease of the eyes or nose).

2. It is impossible to overrate the importance of recognizing the presence of a *neuropathic tendency*, either on the part of the patient himself or on that of other members of

his family. To arrive at a conclusion on this point, it is best to inquire, first, as to "*general nervousness*," or neurotic temperament; next, as to *special organic or functional diseases* of the nervous system; third, as to *nutritional disorders*, as *tuberculosis*, *arthritis*, *diabetes*, and the other constitutional diseases with which the affections of the nervous system are so often associated.

3. The existence of the so-called *stigmata*, or signs of lack of development or disordered development, such as *infantilism*, *peculiarities of the skin and its appendages*, of *the ears*, *the teeth*, *the palate*, etc., should also be sought after; and likewise all signs of *failure of physiological mechanisms*, as shown, for example, in *squinting*, *stammering*, *choreiform tics*, *morbid motor habits*, *faulty heart-innervation*, and the like. Even diseases which are apparently confined to a single nerve, as in *facial palsy*, may have hidden bonds with constitutional, neurosal, or nutritional disorders, the presence of which might be suggested or accentuated by the discovery of "stigmata" such as these.

CASES.

I.

Paralysis of the Extensors of Hand and Fingers, of Sudden Onset.

A middle-aged man, of alcoholic habits, waked in the morning, after having been on a debauch the previous night, with the fingers of the right hand weak and "numb" (paresthetic). It was impossible to extend the carpus or the fingers. The grasp was also feeble, and the fingers could not be doubled into the hand without flexion taking place simultaneously at the wrist. When the hand was strongly extended by the examiner, the grasp became much stronger. The numbness was referred rather vaguely to the back of the hand and the fingers, especially the index and middle fingers, but suitable tests (horsehair for contact, warm and cool objects for temperature) indicated only trifling impairment of cutaneous sensibility. Ordinary rough tests, as touching with the finger, revealed no impairment. The electrical reactions were the same for the two arms. There was no pain or tenderness over the nerve trunks. The affected arm was slightly cooler than its fellow. All other movements were normal, except that flexion at the elbow was somewhat feeble.

The extensor muscles began to regain strength after a few days, and at the end of three or four weeks recovery was complete. The treatment consisted in alternating douches of hot and cold water.

II.

Injury of Ulnar Nerve at the Wrist.

A young man of eighteen accidentally thrust his hand through a pane of glass, and received a deep cut on the

palmar surface of the wrist. The wound was sewed up by his physician after he had ascertained, as he thought, that the deep structures of the wrist had suffered no injury. The patient, however, became at once aware of a feeling of "numbness" in the little and ring fingers; and when the bandages were removed he found the hand weak and thin. When seen by me, four weeks later, all the interosseous muscles were found to be wasted, but the first interosseous much less than the rest. There was a deep hollow between the thumb and forefinger. The three outer fingers (especially the ring and little) remained permanently flexed to some extent in the phalangeal joints, and could not be voluntarily straightened. The fingers remained almost in apposition, and could not be separated without being at the same time flexed, and even then but little. All other movements, both of flexion and extension, were substantially normal. In spite of the numbness of the two smaller fingers the sensibility of the skin was found to be good in most respects, except over a small area on the outer border of the hand, opposite the root of the little finger. Except over this area the lightest touch of the finger was everywhere felt, and even the horsehair test gave normal results. The sensibility to pricking and to the wire-brush (faradic) was slightly blunted, especially at the point mentioned. Pressure over the scar, which lay on the palmar side of wrist, somewhat toward the ulnar border, sent a thrill through the two smaller fingers.

The examination with electricity showed absence of the faradic reaction of the interosseous muscles; while, on the other hand, the same muscles reacted with a slow, wave-like motion to local applications of galvanism, the positive pole having somewhat more effect than the negative. (This is called the reaction of degeneration, and will hereafter be designated as R. D.). It is noteworthy that the slowness of the contraction was not so strongly marked as in many other cases.

Improvement began, as regards the sensibility, within a month or two after the injury. The power of motion began to improve at a somewhat later period, but by the end of a year the patient had substantially recovered.

III.

Complete Paralysis of Whole Arm, of Sudden Onset.

A middle-aged man, of good habits, woke in the morning with his right arm entirely helpless, even including all movements at the shoulder. He gave the history that the day before he had worked for many hours at a job which had involved the putting in of a large number of screws, and that in this way his arm had become greatly fatigued. There was no paralysis of the leg or any other part of the body, and no pain or other sensory disturbance in the affected arm. The patient was seen by me only once, but I learned later that a few days after his visit he died suddenly with symptoms that were thought to indicate cerebral disease.

IV.

Paralysis of Flexors and Extensors of Fingers, without Atrophy. Recovery.

A woman of good habits, thirty years of age, found her right hand growing helpless, without apparent cause. The power of extension of the fingers was lost first, though not with absolute suddenness. Then the flexion became involved, although when I saw her, which was four weeks later, she could still flex her fingers slightly. There was no pain or numbness. The condition of the circulation varied, but the hand was generally cold. The patient said that she had continued to grow worse for about a week, since when her condition had remained unchanged. There was no involvement of the face or leg or of the opposite arm. Careful and repeated examinations with electricity showed no difference

in reaction between the muscles of the affected and those of the unaffected hand, nor could any impairment of sensibility be detected.

The patient returned two weeks later with the report that her hand was practically well. She said that the motion began to improve the very next day after her visit to me, and that recovery was substantially complete at the end of a week. On examination, the power of motion was confirmed, though it was found to be very jerky in character. Indeed, this tendency to jerky movement showed itself a good deal of the time except when the hand was absolutely at rest.

V.

"*Wrist-drop.*"

This case was in all respects essentially like Case I., except as regards the course. The patient continued without improvement for many weeks, in spite of persistent treatment by electricity and otherwise, the electrical reactions, however, remaining unchanged. At the end of perhaps two months the treatment was interrupted by the occurrence of the great fire of 1872, which obliged the patient, who belonged to the fire department, to work day and night for two or three days. Under the stimulus of this excessive exertion he began to improve, and was soon well.

VI.

"*Wrist-drop.*"

This was also, apparently, a case of pressure-paralysis coming on during sleep, but involving, (what is quite unusual) almost all the muscles of the arm, and especially the deltoid. The electrical examination showed a moderate degree of R. D. of the deltoid muscle, but otherwise normal reactions everywhere. The case is reported for a single fact. It was found, namely, that, whereas the patient (a

young man of somewhat nervous constitution) was wholly unable to flex the arm at the elbow or to contract the biceps at all (in spite of the fact that the electrical reactions were normal), his power to make this motion returned rapidly and, indeed, almost at once after a treatment by strong faradization and suitable encouragement.

VII.

Injury of Brachial Plexus from Forcible Abduction of the Arm.

A young man of good previous health, nineteen years old, was ramming a blank cartridge into a cannon, on July 4, 1873, when the powder exploded and his arm was thrown with great force into extreme extension, besides being burned in various places. He was examined at the hospital five and a half months later, and then stated that for the first few weeks the arm had been wholly paralyzed as regards both sensation and motion. At the time of the examination all the muscles of the forearm were found wasted, so that scarcely a trace remained. The biceps, triceps, deltoid, and other muscles of the upper arm and shoulder were better preserved. The fingers were blue and swollen. They lay habitually in a position of semi-flexion, but could be extended and flexed voluntarily to a very slight degree, the two smaller fingers better than the two larger. The thumb could not be moved at all. The carpus could be flexed and extended to a slight degree. Slight flexion and extension at the elbow were possible under favorable conditions, and the arm could be abducted from the body to about 25 degrees. The forearm was rotated inward so that the knuckles pointed forward when the arm hung at the side (pronated, ape-like, position of the arm). The arm and hand were reported as habitually cold, yet the nails were said to grow better on the paralyzed hand than on the other.

Neither the prick of a pin nor water heated to 110° F., nor the faradic wire brush with strong currents, excited their

characteristic sensations, when applied within an area which included the palmar and dorsal surfaces of the first two fingers and the thumb, the adjoining part of the hand, and the radial border of the forearm. These applications did, however, sometimes excite certain vague sensations, of "thrilling character," which were often referred to parts of the hand still possessing sensibility. Over the rest of the hand and forearm the sensibility was better preserved, though impaired in all respects, but even the sensibility of the upper arm was defective in most places. The electrical examination showed the presence of R. D. throughout the paralyzed muscles. The patient remained under treatment for more than a year, in the course of which time the following changes occurred: The muscles supplied by the ulnar nerve, together with the deltoid, triceps, and shoulder-blade group, regained much strength, and at the same time the color of the two smaller fingers (ulnar area of skin) became nearly normal, while the others (median and radial areas) remained blue, the same blue color being present over the radial surface of the forearm. The muscles supplied by the median nerve remained paralyzed for a year and a half, since when there has been slight gain. The extensor muscles of the fingers have never regained their power, even up to the present date (1900).

When the skin over the blue area was scratched, or touched with the wire brush connected with the faradic apparatus, fine red lines or spots would appear, and the redness thus excited would remain for several hours.

VIII.

An unmarried lady, twenty years old, and of good previous health, was exposed to a draft from an open window while riding in the train, in April. The next morning she found herself with a complete facial paralysis of the left side, both upper and lower areas being involved. There was no disease

of the ear. Physical examination showed that when the face was at rest scarcely any difference was noticeable between the two sides, though on attempts at motion the palsy was plainly evident. For the first few days some pain was complained of in the neighborhood of the left ear, and after the first few days the tears began to run over the cheek, excited by cool air or by motions of the face. An electrical examination made some weeks later showed that no contractions of the affected muscles could be excited by stimulation of the *nerve*, except to a slight degree in the levator anguli oris, but that the muscles showed an excessive local irritability to galvanism. (These signs may be summarized as "partial R. D.") Three months after the onset voluntary motion had returned to a considerable extent, having first shown itself in the motions at the angle of the mouth; but she was troubled with involuntary twitching of the orbic. oculi. The electrical reactions were more nearly normal than at first, but by no means perfectly so. Five months from the onset the only sign of disease was a deficient play of the muscles on the left side, and some signs of secondary contracture. The reactions obtained by stimulation of the *nerve* with faradic electricity were still deficient, but the R. D. had disappeared.

IX.

Facial Palsy.

Typical case of facial palsy of the peripheral type, in a lady of seventy. No disease of ear. Marked disturbance of taste, and an excessive dryness of the mouth; great deformity due to sagging of the lower eyelid and buccal muscles; typical R. D.; no considerable improvement at the end of a year, in spite of persistent treatment.

X.

Facial Palsy.

Facial palsy in a child of three, said to have been present since birth. No electrical reactions of any sort obtainable by any currents that the child could bear.

XI.

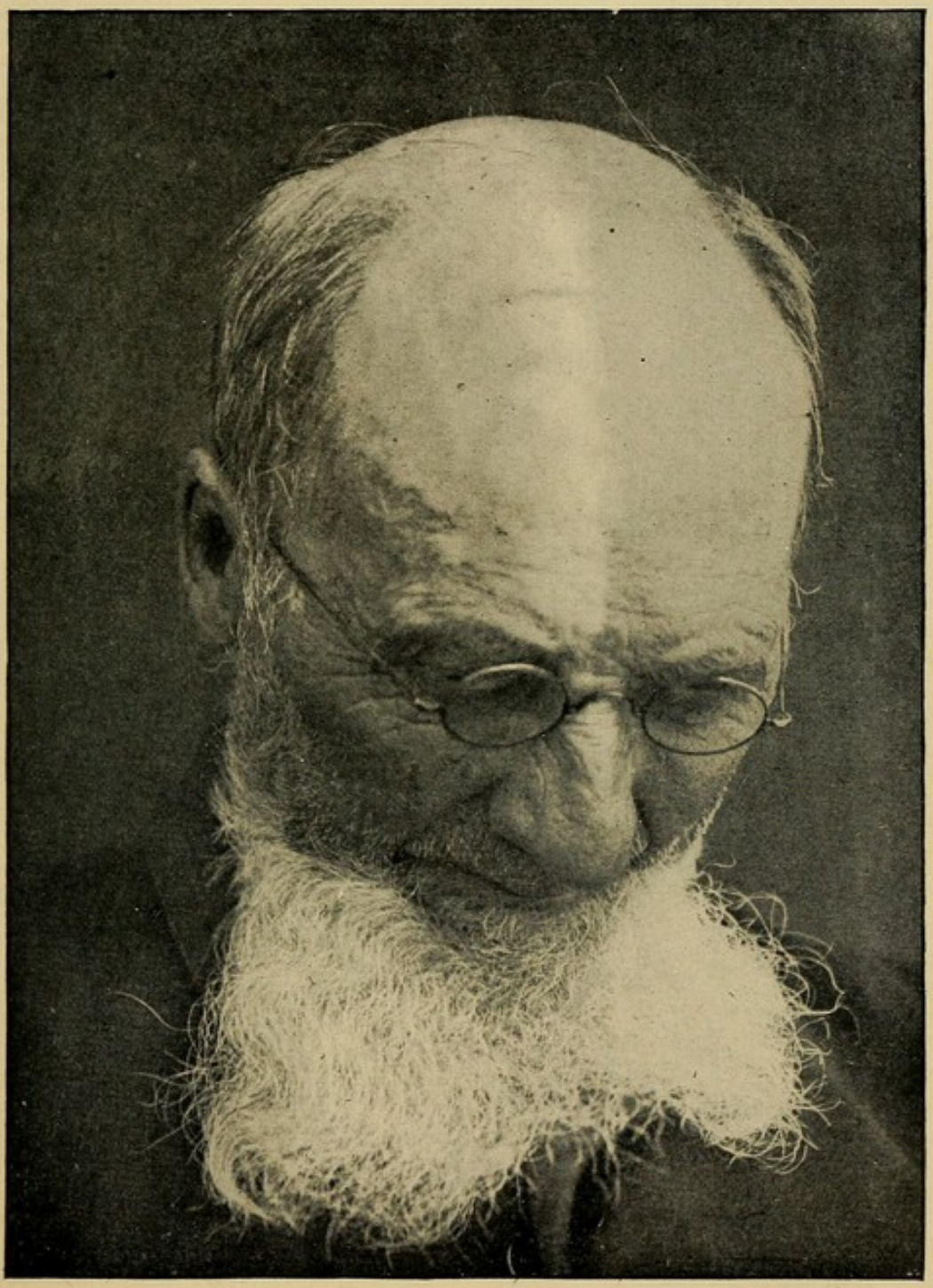
Facial Palsy.

Man thirty-nine years old. Incomplete facial palsy of left side, of peripheral type, all movements being somewhat affected, but none wholly lost. An examination at the end of a week showed a preservation of the faradic reactions; no R. D.; no impairment of taste. On inquiry, it appeared that this patient had had disease of both middle ears since infancy, with frequent discharge; also, that about two months before the onset of the palsy he had had considerable pain in the left ear, without discharge; and, a month later, persistent headache at the vertex, sufficient to oblige him to give up work.

XII.

Facial Palsy.

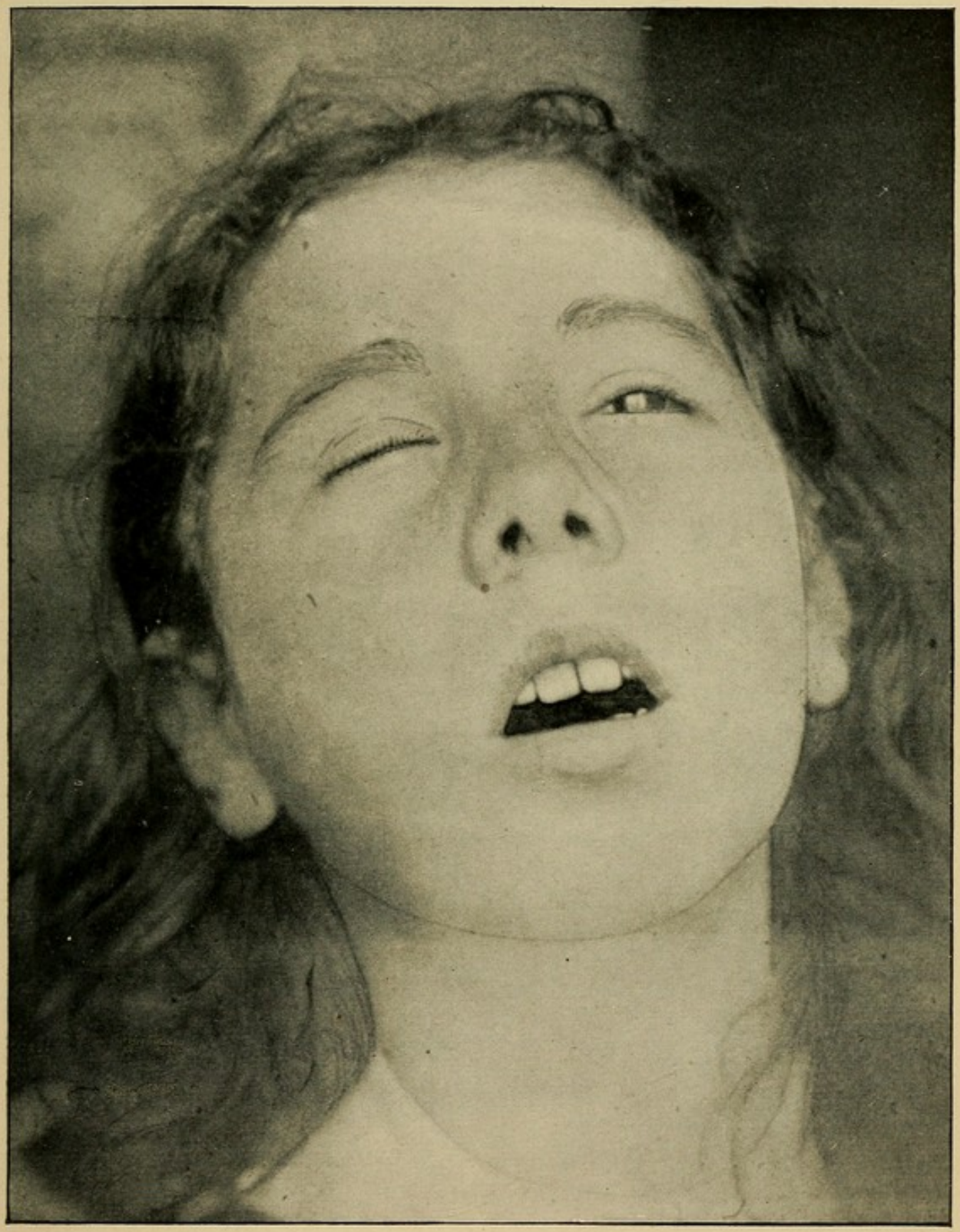
Male patient, thirty-five years old and of excellent health. No disease of ear. Facial palsy of very gradual onset, first noticed as slight stiffness of the muscles, then by the falling in of the cheek between the teeth, and by snapping sensations about the angle of the jaw on opening the mouth widely. At the time of the examination faradic irritability of the nerve was absent, and typical R. D. was present. A little later than this it was found that a small tumor was present behind the angle of the jaw, apparently having its basis in a lymphatic gland; and still later this increased somewhat in size, the paralysis remaining the same. It is noteworthy that in this case the sensitiveness of the affected



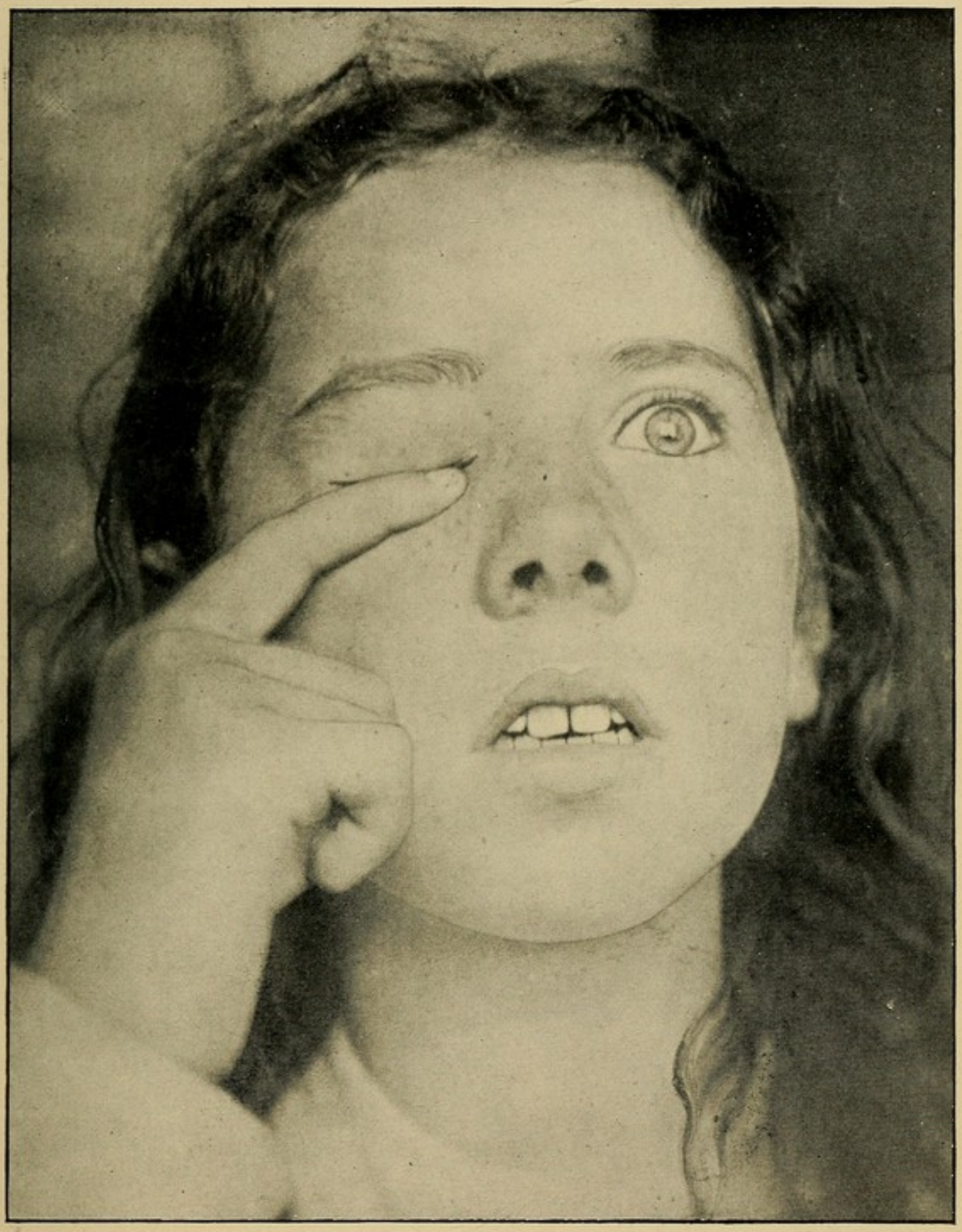
CASE XIV.

Case XV.

Case XV.



Case similar to XV.



Case similar to XV.

side of the face, especially the forehead, so often present in acute facial palsy, was not observed.

XIII.

Facial Palsy.

Male patient, eighteen years old. Incomplete facial palsy, of the peripheral type, the buccal areas being involved more than the orbital. Slight quantitative impairment of the electrical reaction. The interesting point in relation to this case is that the patient had had four attacks before this one, all of the peripheral type and relatively transient in duration. The previous attacks had involved the opposite side to this one. No other member of the patient's family had suffered in this way; but another case may be mentioned where three seizures occurred in two members of the same family, the family history being also marked by a tendency to severe constitutional disorders of nutrition of different sorts.

XIV.

Severe Pain, with Herpetic Eruption, over the Left Frontal Area.

A gentleman of fifty-five, previously strong and well, was attacked with pain in the left frontal area, the left eye, and the left side of the nose near the root. This pain was severe and nearly constant, but every hour or so there would be an exacerbation of a few moments' duration, during which the suffering was so extreme that his nurse was kept on the close watch, with orders to clap on at once a bag of hot hops. After a week or less a vesicular eruption appeared, scattered over the affected area. The skin over the whole area was reddened and inflamed, though irregularly. The pain was somewhat relieved by persistent use of warm applications of constant temperature, changed to hot applications during the exacerbations. Collodion painted on also gave some relief,

and likewise internal medication by aconitia, quinine in large doses, and anodynes of various sorts. After some weeks the pain subsided to some extent, but a modified and somewhat severe neuralgia persisted for many years. The vesicular eruption gave place to an atrophied condition of the skin, with loss of pigment, and pitting corresponding to the vesicles.

XV.

Ptosis, due to Spasm of the Orbicularis Oculi.

A girl of twelve years of age awakened one morning to find herself unable to speak aloud. This symptom persisted for a week, at the end of which time she was able to talk naturally for a few hours at a time, after which the trouble would suddenly return. She gradually recovered in the course of three or four weeks. One month later, while dressing, both her eyes became so tightly closed that she could not open them, even with the aid of her fingers. After two or three days the right eye opened naturally, but the left remained obstinately closed. This condition had persisted two weeks when she applied for treatment.

Physical examination showed a marked spasm of the left orbicularis oculi, and any attempt made by the patient to open the eye only increased the spasm, and brought on a contraction of the muscles of the lower part of the face. (See photograph.)

There were no other motor disturbances and no sensory disorders. Daily treatment resulted in temporary power to open the eye, and at the end of a week the trouble had disappeared. It was learned that the patient's mother was at one time troubled with numbness of the hands for several months; and sometimes, with no apparent cause, the first two fingers of her right hand would turn perfectly white and feel cold and "dead."

XVI.

Facial Palsy, preceded by Convulsions of Face and Arms.

A woman sixty-five years old awoke one morning to find the lower muscles of her face paralyzed on the left side. During the previous day she had had two spells, lasting four or five minutes each, during which the left facial muscles and the left arm had twitched convulsively. Similar attacks recurred several times in the course of the next two days, and it was on account of these that she applied for treatment.

Examination showed the pupils to be equal and to exhibit normal reactions. The eyes could be moved normally in all directions. Both the eyelids could be closed synchronously. She could wink naturally with the right eye alone, but the left eye could not be closed independently of the right. The frontalis muscle contracted normally, but there was complete paralysis of the lower facial muscles, and the mouth was drawn markedly to the right. R. D. was absent. There was no impairment in the strength of the arm-muscles, and no disturbance of sensibility. The left wrist-jerk was livelier than the right, while the patellar reflexes were normal.

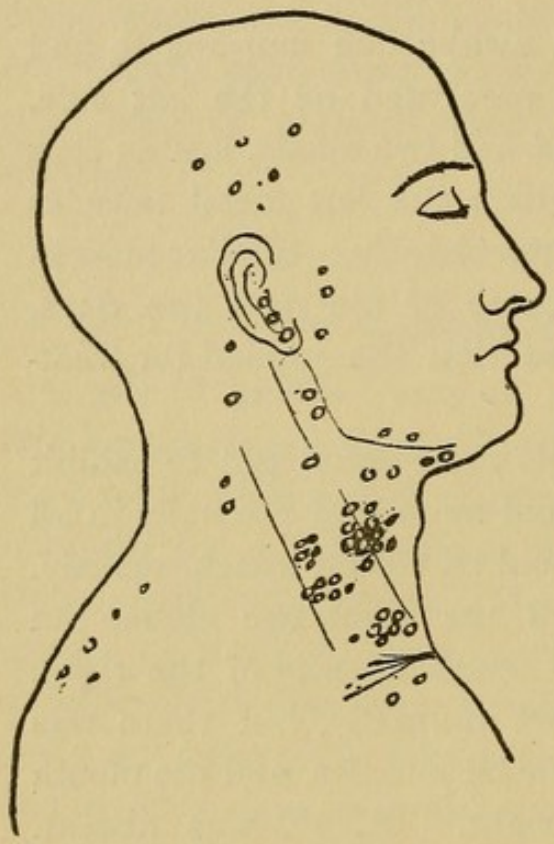
The heart-sounds were of good quality, except that the aortic second sound was sharp and valvular. No murmurs were heard, and there was no enlargement. The temporal and radial arteries were palpable but not calcified. The pulse was regular and of rather high tension. Urine-examination showed nothing abnormal.

XVII.

Facial Palsy; Herpes of Face and Neck.

On June 13, 1902, a lady of forty was attacked with pain within and immediately below and behind the left ear. From this area as a centre, the pain streamed up more or

less into the left eye and to the top of the head, and also down into the neck, where there was a sensation as of hot coals. Two days later a typical herpetic eruption appeared over various parts of the whole painful area, though less in and about the ear than on the neck between the jaw and clavicle. Scattered vesicles broke out on the side of the face, and there were a few down over the shoulder, even to below the spine of the scapula.



Case XVII.

These vesicles continued to come in successive crops for a week or more. They frequently coalesced, and eventually dried up. The pain grew worse for a week, then began to lessen.

At this period the patient became aware that she could not use her upper lip, and then that she could not close her eye and that her tongue felt queer, and within a day the whole left side of the face was paralyzed, and she was unable to recognize sugar, salt, or vinegar placed on the left half of the tongue.

An electrical examination, made June 25, three days after the onset of the paralysis, indicated a slight quantitative impairment of the nerve-muscle reactions, but gave no evidence of the reaction of degeneration.

XVIII.

Supra-orbital Neuralgia of Migrainoid Type.

A middle-aged woman — of good health except that in her earlier years she had suffered from periodical attacks of migraine, which had also appeared in several members of her family — began to show a tendency to periodical attacks of severe throbbing pains in the supra-orbital region and eye of the left side, coming on frequently after an attack of coryza, but also at times without that cause. Each attack lasted one or two weeks, the pain recurring every morning at eight or nine o'clock, increasing in severity until one o'clock, then gradually subsiding, and disappearing about three o'clock. Nausea and vomiting accompanied the severer attacks. Occasionally there would be a recurrence of the pain in the evening. Quinine in large doses, taken four hours before the beginning of a seizure, would sometimes avert it; but this soon lost its effect to some extent. Treatment of the nose, of such a kind as to secure freer drainage in the ethmoid and frontal sinuses, was of some benefit. In the intervals between the attacks she was perfectly well.

XIX.

Severe Frontal Pain of Chronic Course, relieved by Operation.

An elderly lady had suffered for years from an intense "epileptiform" pain in the supra-orbital area, with little relief except sometimes at night. The pain recurred spontaneously and was also excited by touching or brushing the skin. Occasional free intermissions of several weeks' duration had occurred. There was also some pain of a similar character in the infra-orbital area. Finally, excision of the supra- and infra-orbital nerves brought complete relief, and this lasted until the patient's death, some years later. Marked alterations were found in the nerve.

XX.

Pain in the Distribution of the Ophthalmic Division of the Fifth Nerve, recurring Daily at the Same Hour.

The patient was a healthy but somewhat neurasthenic man, fifty years old. Ever since boyhood he had had attacks of the above-mentioned type, recurring at intervals of several years, each attack lasting from three to six days. Coryza, with inflammation in the frontal sinus, had been the exciting cause in almost every instance. The severity of the attacks had varied greatly, and in the severest examples there had been, besides the morning recurrence, a return of deep-seated, dull headache toward nightfall. One group of attacks was prolonged for months, and seemed to give rise to a sort of indolent neuritis of the ophthalmic division of the fifth nerve, which led, in its turn, to a thickening of the periosteum under and above the eyebrow, and this had not wholly disappeared at the end of several years. Prolonged reading would cause aching of the eye on the affected side, even in the intervals between attacks, and at times scanty crops of tender papules would appear on the skin of the forehead, independently of the neuralgia or during prolonged seizures. Fatigue might also bring on slight pain at any time.

The family and personal history in this case are quite interesting. Several of the patient's immediate family had suffered, though but slightly, from typical migraine; his maternal grandfather, his mother, his brothers and sisters, and his daughter had been subject to attacks of the same sort as his own, and a cousin had had typical migraine all her life. The patient had had once, but only once, in his life, an attack of vibrating scotoma, lasting half an hour and not followed by headache. A brother had had a similar single attack of scotoma, followed by headache,—in short, an attack of migraine.

The mother had had numerous attacks of intermittent migrainoid neuralgia, just like those of the patient; and a sis-

ter had had a single group of severe seizures of the same sort, covering a space of two weeks. These had followed a period of intense fatigue and excitement, besides a prolonged exposure to a cold wind and the painful extraction of a large tooth. The sister's attack had been succeeded by a severe pseudo-angina pectoris, which lasted for several weeks and made walking very difficult. The same sister, when fifteen years old, had had repeated attacks of intermittent headache of the same sort as those of the patient.

XXI.

Facial Neuralgia.

This patient is a man of sixty-five years, of good general health, good nutrition, and with a finely shaped head and large frame. His symptoms have been present for three years, and the onset was gradual and without known cause. He first noticed a kind of stinging sensation at the seat of the subsequent pain, and this troubled him through the winter but disappeared in the spring. The next winter this returned, and with greater intensity, though the pain was not so severe even then as it was at the time of the first examination. The principal seat of the pain has been, from the first, the floor of the right nostril, where "jumping" and "stinging" sensations of great severity could be brought on by touching the spot itself, or by any motion of the lips. Occasionally he has a darting sensation at a point on the right side of the head near the vertex, suggesting the prick of a needle; and, when this point is touched, the pain will start up in the nostril. He has had four teeth drawn, but without relief. There is no pain during the night or when the mouth is held perfectly quiet. Occasionally the pain streams up into the eye, and makes it water. His hearing is affected in a peculiar way: he can hear his clock tick even when a long distance away, but, when a number of people are talking in the same room, he gets confused, and has constantly to ask what is said.

Although this patient was not troubled especially by constipation he was directed to take castor oil every morning, in the dose of half an ounce to two ounces. Within a few days after this treatment was begun he felt better, and eventually recovered; he has remained substantially well ever since, though an interval of two years has elapsed.

XXII.

Intercostal Neuralgia.

A woman of fifty-five came complaining of severe pain in the left chest, sometimes rather anteriorly, in the cardiac region, and again rather in the axillary area. This came on from fatigue and changes of weather, especially changes from clear to stormy weather but sometimes also the reverse.

On physical examination it was found that the skin corresponding to the distribution of the pain was covered with brownish or whitish depressed scars, and, on inquiry, the patient gave an account of having had an attack of very intense pain in this same locality two years previously, at which time the skin became inflamed. Ever since that time she had continued to have more or less pain, as first described. The patient was of neurotic temperament, and lived under rather poor conditions. Tonics and local applications brought her a good deal of relief.

XXIII.

Intercostal Neuralgia.

A gentleman of forty was attacked suddenly with a pain over a small area in the left side, at about the level of the fourth rib, of such severity that he turned pale and vomited, and had to be given a subcutaneous injection of morphine. After this began to act, the pain ceased. The feeling, while it lasted, was as if some blunt instrument was being pressed with great force against the ribs at a certain point.

The apparent cause of this attack was fatigue from a short but stormy sea-voyage, associated with a prolonged fast. The patient had suffered in the past from other forms of neuralgia and other neuroses, and the same could be said of other members of his family.

XXIV.

Severe Neuralgic Pain over the Back of the Head on the Left Side.

The patient was a clergyman and teacher of somewhat advanced age, and had suffered very intensely from this pain for several years, with some periods of relief. No treatment had been of benefit. No other part of the head had been involved, but examination showed a hyperæsthetic condition of the skin to contact and even deeper pressure over the whole left side of the body. Pulling the hairs on this side of the body caused more pain than on the other side. Various methods of treatment were tried, but nothing gave him permanent relief.

No record is preserved of the patient's physical condition in other respects, but it may be said that he exhibited no cardiac or renal disease at the time of the examination. He died some years later from an intercurrent disease.

XXV.

Almost Constant Pain in the Back of the Neck, on the Left Side, of Long Duration; also, Pain on the Right Side of the Face.

The patient is a married lady of forty-three, an eminent writer, without children. The pain in the back of the neck has been present for about a year, but previously to that she had suffered from paroxyms of neuralgia on the right side of the face, due apparently to disease in the antrum. This

cavity was finally opened and cleaned out, and eventually dead bone was found and removed. Immediately after the operation the pain in the back of the neck began in full force. It now recurs periodically, as often as three or four times a week, beginning at three or four o'clock every morning, and lasting until the patient gets up and about. Occasionally it comes back in the afternoon. Besides these two kinds of pains the patient has had severe left-sided headaches, preceded by aphasia, with numbness of the right hand and vibrating scotoma. Sometimes she has been free from the pain in the neck for two or three weeks at a time, but it is noteworthy that, in proportion as the pain in the neck has been more constant, the tendency to the left-sided headaches has been less. The patient also suffers constantly from a tendency to frequent micturition, so that she is unable to go more than half an hour without passing urine. This seemed at first to be explained by the presence of multiple fibroids, but there must have been some other cause as well, since their removal did not bring about a cure.

Physical examination shows a well-nourished, healthy-looking, but rather high-strung, excitable person. Nothing is found locally in the neck except a slight tenderness on deep pressure. All the organs, both thoracic and abdominal, are normal, except as stated. No treatment hitherto suggested has been of service.

XXVI.

Intense Pain in the Left Side.

This patient was a man of thirty-two, strongly built, of easy circumstances, and presenting, when first examined, an appearance of good nutrition. His story was that he had begun to have a slight pain in his left side, from the cardiac region to near the shoulder-blade, about three years previously, and that this had been growing steadily worse ever since. It followed him, he said, night and day, and was increased by movement and relieved by rest. He could

not, however, lie down, because this position made the pain especially intense, and he was forced, therefore, to sleep in a sitting position, with the head thrown forward and resting on the back of a chair. When he leaned back the severe pain soon began, little by little, to return, usually preceded by a sort of pulling sensation of gradually increasing intensity. He was unable to get on without morphine, but avoided it so far as possible.

Physical examination showed a moderate enlargement of the heart with a thumping apex beat, also a to and fro murmur over the aortic orifice. A diastolic murmur was heard also at the apex, probably by transmission. He had had gonorrhœa, and some sort of sore which went away with treatment, and also a suppurating bubo; and a scar was found on the glans near the corona. When the pain was severe it reached to the middle of the sternum, and at such times the left arm was also somewhat painful, the sensation being as of something shooting down through the arm and into the fingers, especially the two smaller fingers.

This patient was kept under observation off and on for several years, and various diagnoses were considered before the right one was arrived at. Finally this was arrived at by the aid of another sort of physical examination not here recorded. One physician after another, failing to discover any cause for his pain, and noting the fact that it would sometimes remit as mysteriously as it came, declared their belief that he was hysterical and hypochondriacal, or suffering from "habit-pain." It may be said that maximum doses of potassium iodide and mercury were repeatedly used without effect.

XXVII.

Neuralgic Pain of Burning Character in Right Hand and Arm.

A female patient, thirty-eight years old, came for treatment on account of severe pain in the right arm and hand,

which had been present for a number of months, but had grown much worse of late. It was especially severe in certain spots, as the palm of the hand and the third finger. In these places the pain was of a burning character, suggesting the contact of hot coals. Inquiry into the personal history showed that this patient had had several attacks of this sort, the first as long as sixteen years before, and also that she belonged to an intellectual but neurotic family, and that her sister had had an acute attack like that from which she now suffered. The present attack had begun in cold weather; and the pain had involved at times the shoulder and shoulder-blade, as well as the arm. It was worst at about three o'clock in the morning and from then until eight, but rarely disappeared entirely. The median nerve could be felt as a distinct cord throughout its humeral course. Relief, and finally cure, was brought about by repeated, superficial cauterization; but the pain returned in some degree a year later.

XXVIII.

Wide-spread Atrophic Paralysis, of Acute Onset, in a Young Child; associated at first with Fever.

A child of three, of ordinarily good health, went to bed feeling somewhat sick, though without serious symptoms, but waked in the morning unable to walk or use the legs, and scarcely able to move. During the night she had been somewhat feverish, but the fever did not continue. For the first week she was unable to raise the hands as high as the head, but could always move both hands and arms somewhat. Some pain was complained of in the left arm, and a feeling which she described by likening it to "needles in the bed." There was also a feeling of soreness about the neck, and she objected greatly to being moved. For the first two or three weeks she seemed too exhausted to talk, and, in fact, could hardly be understood, so that it is possible that there was partial paralysis of the vocal muscles. At times

there was slight delirium. After a week or two she began to improve and became able to turn in bed, but she could not for a long time sit up alone. She was so sick that for some weeks no close examination was made, but she was then found to be completely paralyzed below the waist. Disorders of sensibility were, however, not present, except that there was pain on handling. The muscles were flaccid, soft, and small. Well-marked R. D. was found, on electrical examination, in the tibialis anticus and gastrocnemius. No response could be obtained from the thigh muscles with the faradic current; and it is probable that R. D. would have been found here also, but that the examination was desisted from on account of pain.

XXIX.

Wide-spread Muscular Paralysis and Atrophy, of Acute Onset, associated at first with Severe Pain.

This patient was a young woman, unmarried, and of good previous health. Her illness occurred in the latter part of August, 1880, after a period of exceedingly hot weather. As a possible exciting cause, she had had an exposure to the wet while menstruating, as a result of which the menstruation had ceased. The symptoms began with severe generalized pain and retention of the urine. It is not known whether fever was present at first, but presumably this was the case, since as long as three weeks later, at which time she first entered the hospital, the temperature was 99.8° F. The initial symptoms were quickly followed by a rapidly increasing and wide-spread muscular paralysis, associated with paræsthesia of the extremities. Nearly all the superficial muscles of the body became very weak and more or less wasted, but the muscles of the right arm, especially those involved in abduction at the shoulder and flexion at the elbow, were more affected than any others. The small muscles of the hand were also seriously atrophied. Pain, increased by passive motion, continued to be a prominent

symptom. The patient improved gradually for six weeks, but then was seized with vomiting, paralysis of the sphincters, rapid pulse, and dysenteric discharges, attended with high fever, and died after a two weeks' illness. As convalescence advanced, the contrast between the more and the less damaged muscles became steadily more marked.

The record of the *post-mortem* examination will be given in connection with the discussion of the case.

XXX.

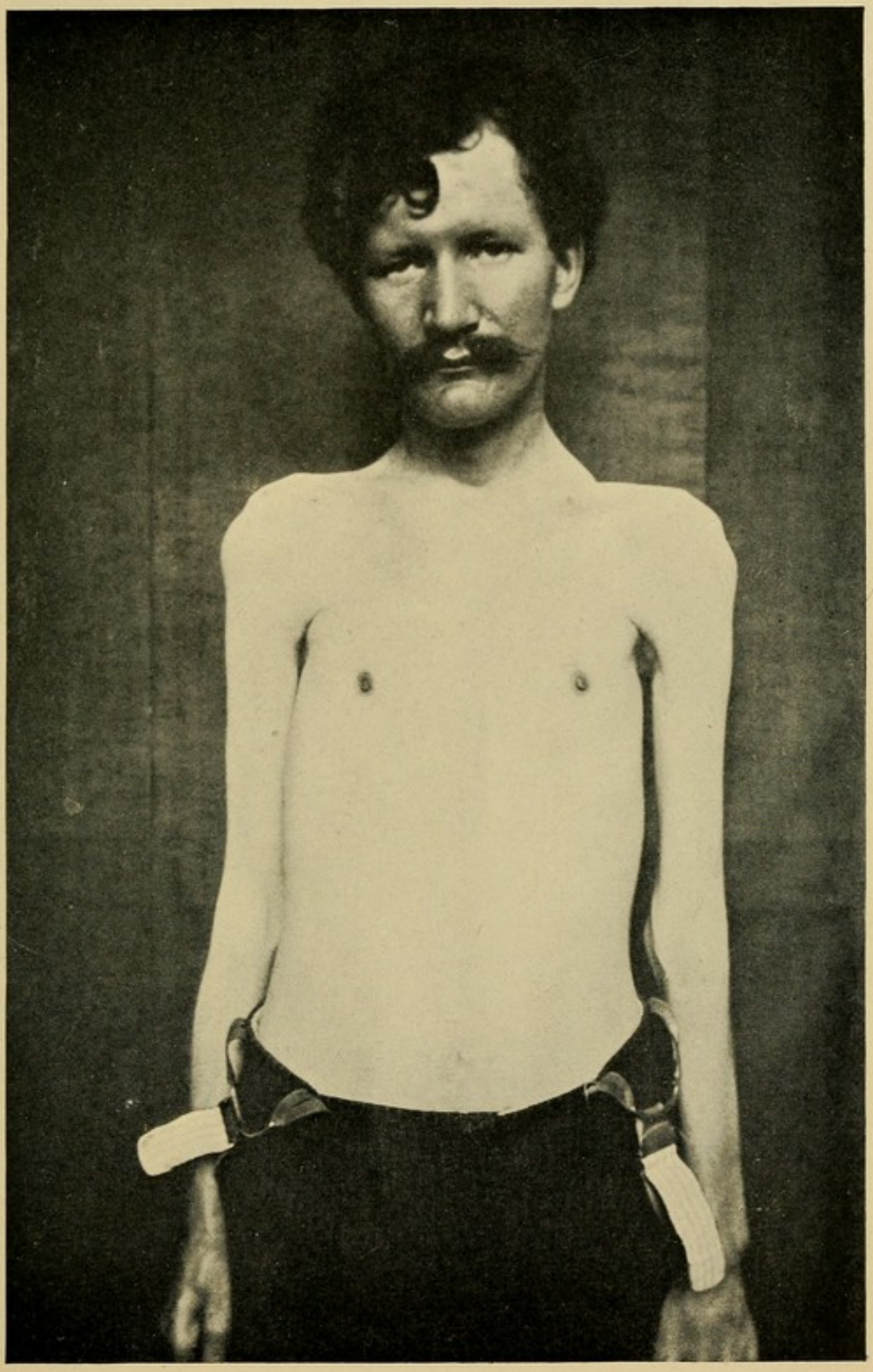
Rapid Loss of Power in Arms and Legs, followed by Widespread Muscular Wasting; later, almost Complete Recovery in Legs and Improvement in Arms. No Disorder of Sensibility.

The patient whose condition is represented by the accompanying pictures was formerly a healthy, vigorous young farmer, with well-developed chest and muscles.

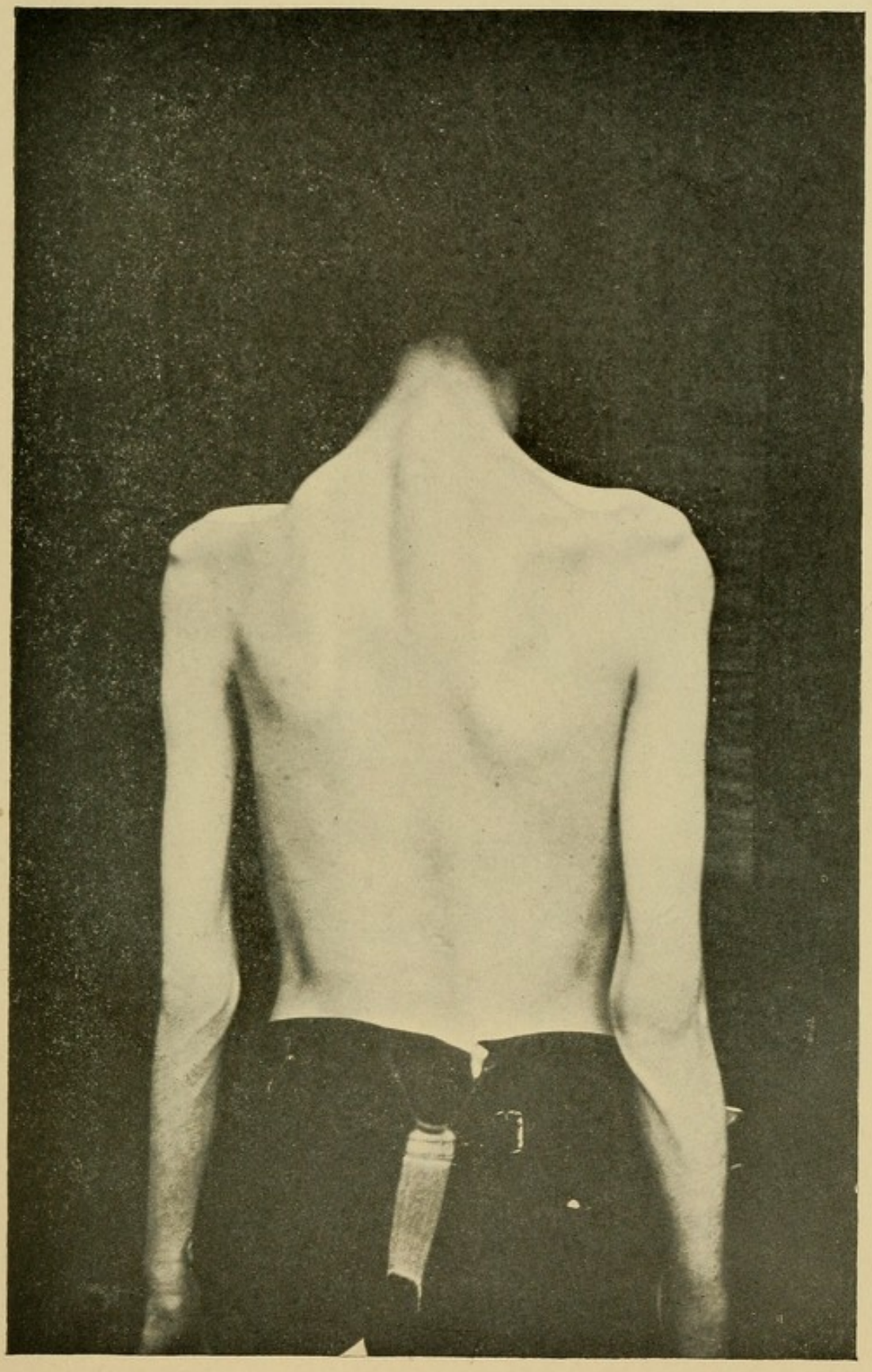
Six years before his first visit to the hospital — that is, when he was sixteen years old — he was working hard in the hay-field, one day in August, when he found himself getting feverish and suffering from a severe headache, and at the same time observed that his arms and hands were becoming rapidly weak, and his legs also, though to a less degree. Except for the headache, there was no pain; nor was there any loss of sensibility. He got home, and went to bed, but was very soon wholly unable to use his arms or legs. None of the muscles supplied by the cranial nerves were involved, but the movements of the head were somewhat affected. There was no loss of control of the sphincters.

He lay in bed for six months, gaining considerably, meanwhile, in the use of the legs, and, to a very slight degree, in the use of the arms and hands; though, for practical purposes, they remained almost helpless.

Before the end of a year he could walk about; and now, at the end of six years, his legs are almost as well as ever, though he cannot run, or walk fast.



Case XXX.



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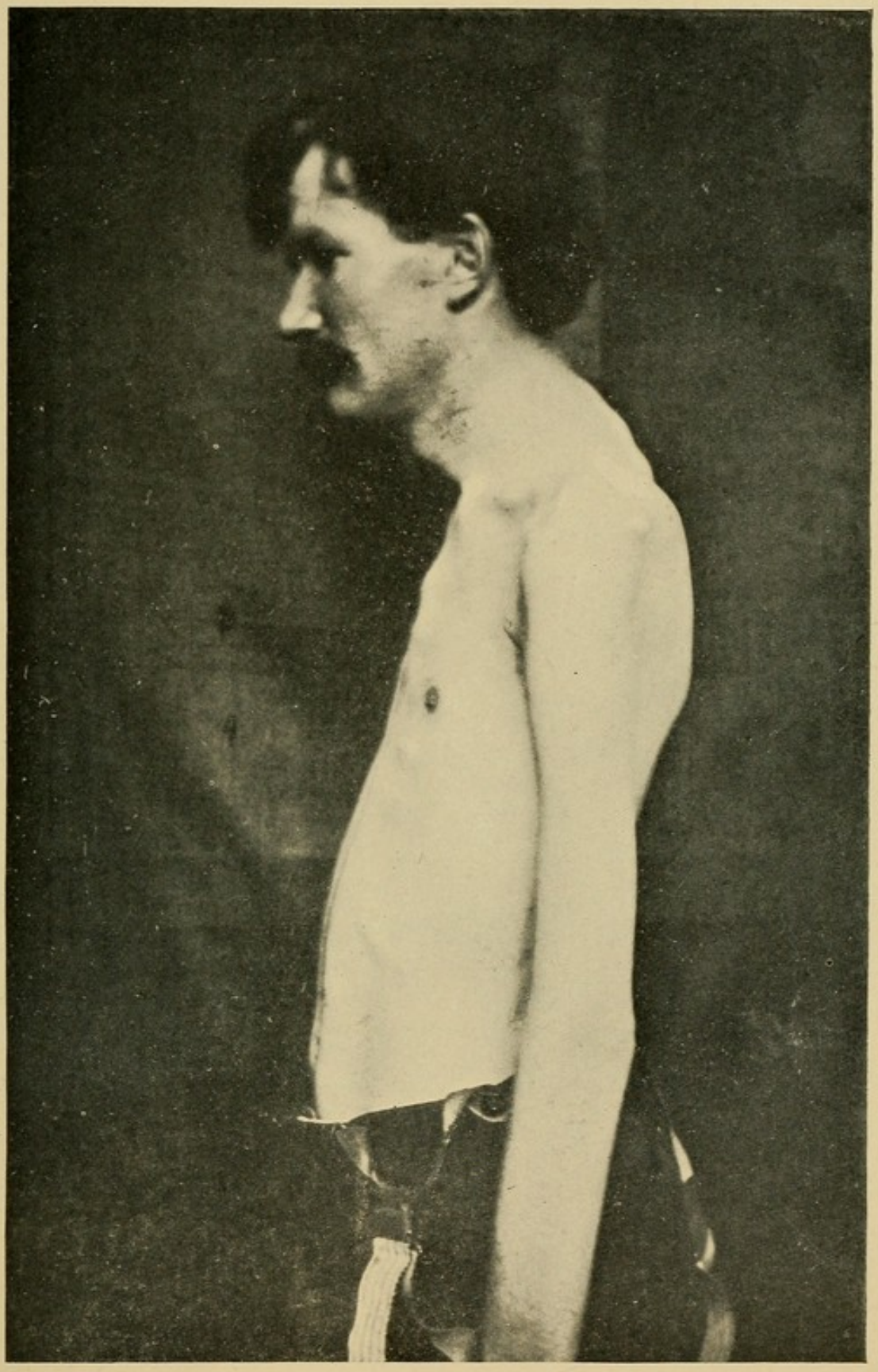


CASE XXX.

The muscles of the shoulder-girdle, arms, and hands, are now greatly wasted, especially those of the left side. The head of the humerus hangs loose in the socket. The flesh has shrunk away from the shoulder-blades and the cervical and upper dorsal spines, while the hand muscles are almost wholly gone, especially on the left side, so that the carpal bones stand out and the fingers remain semi-flexed and contractured.

Nevertheless, slight though excessively feeble movements are possible in many of the wasted muscles, and certain groups — such as the long flexors of the fingers — are fairly well preserved.

The chest expansion is impaired but not lost. The legs are muscular, but signs of wasting are seen here and there, especially in the left quadriceps group of muscles. There is no disturbance of sensibility.

General, coarse fibrillation (myokymia) is seen over the back and arms. Every variation of electrical reaction is represented, from simple quantitative diminution of the faradic irritability, with rather slow and very feeble contractions, to complete R. D. Improvement still goes on, though extremely slowly.

XXXI.

Wide-spread Paralysis and Atrophy of the Limb Muscles, of Acute Onset, with Fever.

An unmarried woman, twenty-nine years old, employed in a shoe-shop, presented herself in January, 1901, on account of almost complete loss of the use of the right arm at the shoulder and elbow, and some weakness of the left hand especially as regards the movement of the thumb. She described the onset of the disease as follows: She had been well up to the previous September, when she had been attacked suddenly with severe pain, first felt in the back near the point of the shoulder-blade, then in the head and the back of the neck. This was followed at once by fever,

which confined her to her bed for two days. She tried to work but found it impossible, the pains in the head and back of the neck growing constantly worse. Then she went to bed and stayed there three weeks, though there was not much fever after the first few days. The right arm had become painful very early, as well as the neck and back; and, at the same time with the onset of this pain in the arm, or a little before it, the muscles there became extremely weak. The pain was mainly in the shoulder and upper arm, where the muscular weakness was also the most pronounced, and it was increased by motion. These pains lasted three weeks. For some time there was a sense of numbness in the hands and fingers, but this became gradually less, though it had not wholly disappeared at the time of the first examination. The right leg and the back were also very weak, and the right leg was painful from the knee down to the foot. The left hand and the left leg were affected somewhat, but to a less degree.

Physical examination gave the following results: As regards the right arm, there was a marked atrophy of the supra- and infra-spinatus, the deltoid, the triceps, and the biceps, though it was somewhat masked by subcutaneous fat. The forearm muscles were also flabby, especially the flexors. Abduction at the shoulder was impossible, although fibres of the deltoid could be felt to contract when the effort was made. There was no power of rotation outward or inward at the shoulder. When the arm was passively raised, it could be depressed feebly by the pectoralis and the latissimus dorsi, though these muscles also were weak and wasted. The shoulder-blades could be approximated fairly well behind, and the point of the shoulder raised, though very feebly. The erector-spinæ muscles were so flabby that the fingers could be pressed in deeply, especially on the left side. The right arm hung a little low at the shoulder, leaving quite a space between the head of the humerus and the socket. The grasp of the right hand was fair, though

weak. The thumb lay almost on the plane of the hand. Flexion and extension at the elbow were possible, though very weak; but flexion seemed to be done almost wholly by the supinator longus, the biceps and triceps contracting, to be sure, but too feebly to accomplish much. The left arm was in a similar condition, but was much less severely affected, except that the movements of the left thumb were weaker than those of the right. All motions of the legs and feet were possible, but there were indications of weakness here and there. The knee-jerks were present; but that of the left side was very feeble, while that of the right side was fairly good. The sensibility to touch seemed to be everywhere perfect. The faradic reactions were greatly diminished, qualitatively and quantitatively, even in the moderately affected muscles, such as those of the two forearms, the contractions being slow and feeble and much less marked than would be expected from the condition of the functional activity. There was well-marked R. D. in the muscles most affected. There was no tenderness over the limbs; and there had been none, she said, even during the height of the disease, except at the right shoulder where the muscles were most strongly affected. Passive motion of the limbs, however, brought on an aching which would last for some time.

The sphincters were unaffected.

So far as she knew, no other cases had been observed in the neighborhood.

Treatment was of but little service, and improvement was slow and imperfect.

XXXII.

Partial Paralysis of all Four Limbs, resulting from a Fall on the Head.

A young, vigorous man was thrown from a wagon, Jan. 24, 1872, and struck on the head and shoulders. He was at first wholly paralyzed, but after the end of four days he

recovered his power of walking. There was considerable paræsthesia of both arms, and, at first, almost complete paralysis, the right being more affected than the left. At the end of two weeks the left arm had recovered its strength, while the right arm was better but had not wholly recovered.

At the time of the first examination, which was a few weeks after the accident, all the muscles of the right arm, both above and below the elbow, were found to be somewhat smaller than those of the left. Extension of the fingers was impossible, and the electrical examination showed that the long extensor muscle (extensor com. dig.) could not be made to contract by the faradic current, and was abnormally sensitive to the galvanic current (R. D.). Extension of the carpus was not wholly lost. The fingers were somewhat bent and could not be fully straightened, and the electrical irritability of the interosseous muscles was diminished though not lost. All the other movements of the hand and arm were possible, though more or less weak. The reaction of the long flexors to electricity was unimpaired, and likewise that of the supinator longus. The patient was seen again twenty-eight years later, and it was found that no considerable improvement in the use of the arm had taken place.

XXXIII.

"Numbness" and Weakness of Arms and Legs, with General Nervous Symptoms, following a Blow on the Head.

This patient was a man of sixty-eight, of good habits, but of little social training. In the course of his work as janitor of a school building, he was struck violently on the right side of the head, in February, 1900, by a heavy door, blown to by the wind. For a number of days nothing in particular was complained of except some prostration. Then he began to be annoyed with tinnitus of the right ear. A few weeks later he began to have numbness of the fingers of both hands and considerable weakness both of the arms and legs,

increasing gradually. He also fell into a nervous state, so that after a few months he went to bed and stayed there most of the summer, complaining of staggering and dizziness if he tried to walk, and able to use his hands and arms but little.

On examination eight months later, he was found with general emaciation but no localized atrophy or paralysis. On being told to move the fingers, he showed his ability to make all motions, but his grasp was excessively feeble, though he seemed to make great exertion. On encouragement the extent and power of the movements were considerably increased. There was no disorder of sensibility. The fingers seemed to have become stiff, so that even passive motion was impossible to the extent of complete flexion, and when this was attempted he complained loudly of pain. The motions of the right shoulder were also restricted to passive motion. The knee-jerk was exaggerated on both sides, and there was an indication of ankle-clonus, which, however, could not be obtained when the muscles were relaxed.

XXXIV.

Paralysis and Atrophy of the Arm; Erb's Type.

A healthy young man of twenty-one awoke one morning in September with severe headache and fever. He stayed in bed two days, but his symptoms did not change. Then he tried to go to work, though feeling weak and tremulous. On the third day he woke up in the morning, still feverish and prostrated, and then for the first time he found himself unable to move the right arm at the shoulder, though he could flex and extend the forearm at the elbow. The hand was also weak and nearly helpless. Again he lay in bed for two weeks, during part of which time his headache continued.

There has been no pain in the arm at any time. The left arm also became weak at the same time with the right, though to a much less degree. For two weeks he could not

raise the left hand above the head, but gradually the muscles of that arm regained their strength and the movements became nearly normal. He thinks that there was no real loss of power in the legs except what would be accounted for by his general weakness.

On examination, it was found that all the muscles covering the right shoulder were greatly atrophied. When he raised his arm the scapula moved inward toward the spine and fell off from the side of the chest at its posterior edge. All the muscles of the upper arm were also considerably wasted, and likewise all the intrinsic muscles of the hands. The forearm muscles were pretty well preserved. The triceps were very weak, and the biceps also, though to a less degree.

A careful electrical examination showed a diminution of the faradic irritability of the muscles, corresponding in degree with the weakness and atrophy which they respectively exhibited. There was a typical R. D. of the thenar and interosseous muscles of the right hand, and a partial R. D. of the deltoid.

Under careful exercises the patient improved slowly, but did not entirely recover.

XXXV.

Paralysis of the Left Arm; Erb's Type.

A small boy of seven was brought to me in March, 1897, on account of weakness and awkwardness of the left arm. In fact, the arm was seen to hang limp by his side fully extended and rotated inward, so that under ordinary circumstances the knuckles looked forward.

The history was given that this condition was noticed immediately after birth, which had been a very difficult one, requiring the use of instruments. The head and neck had been greatly bruised, and after delivery there was a swelling "like a small cabbage" on the side of the neck.

On closer examination it was found that, while the deltoid

and the pectoral muscles were fairly well preserved, there was complete paralysis of the triceps, and of the extensors of the fingers and hands, and almost complete paralysis of the biceps. The intrinsic muscles of the hands were all paralyzed and wasted, although the wasting was, in a measure, masked by the subcutaneous fat. The upper arm hung loosely at the shoulder-joint and could be half dislocated with a little effort. Besides this condition there was an entire loss of sensibility of the hand except in the distribution of the median nerve, and, even when this area was pricked, the feeling which was excited was referred to the neighborhood of the wrist (compare Case VII.). There were scars on the back of the hand and on the ends of the fingers, where the child had burned himself without being aware of it. This impairment of sensibility reached, in some degree, to the elbow, but above that point the sensibility was normal.

XXXVI.

Pain in the Arm of Long Standing.

In June, 1895, a man of thirty, a teacher in a commercial college, came for advice on account of pain or rather a sense of discomfort and distress in his right arm, not very severe, but so annoying that it had obliged him or induced him to give up his pursuits one after another, even to that of riding the bicycle, of which he had been very fond. This pain had begun five years before, the exciting cause having apparently been excessive use of the arm in writing, which at the time brought on this condition of excitability. For a long time he had had massage from a skilled gymnast, and under this he had improved somewhat; but the gain was not lasting, and he was finally advised by his physician to give up his work and live on a farm. At the time of his examination it was all he could do to write even a line a day without bringing on a distressing sensation, first in the wrist, then in the muscles just below the elbow, and

finally in the shoulder and whole right side, until he felt "unnerved" all over. His general health was good, but he had never been very robust.

Eight weeks previously he had had a slight irritation of the throat, so that talking was uncomfortable; and for six or seven months he had refrained from talking almost altogether.

Eleven years before his first examination he had sprained his ankle, and had hobbled around for a long time with a painful and sensitive foot. Finally, he came to the conclusion that he must get well, and, consequently, began to walk without regard to the pain. Under this somewhat heroic treatment the ankle promptly got better.

Physical examination showed nothing in particular except that he was a spare but fairly muscular man with an anxious, tired expression. The subsequent history of the case will be given in the course of the discussion.

XXXVII.

Pain in the Right Arm and Other Symptoms.

In March, 1902, a lady came for treatment on account of severe pain in the right arm which troubled her especially at night. The area to which this was referred was a definite one, and occupied the inner aspect of the arm from the axilla to the carpus. The pain was irregularly intermittent in course, disappearing and then coming on again with intense violence. At night the arm felt as if wires were running through it, she said, and the pain was "something terrible," so that she had not had a good night's rest for a year. Occasionally a sensation, described not as a pain, but as a crawling feeling, runs down the right side of the chest and into the abdomen. These symptoms began gradually more than a year ago.

On careful examination the following conditions were found: —

The left pupil was larger than the right, and neither

responded to light, while both contracted with efforts of accommodation. The left knee-jerk was also greater than the right, though both were present. There was some degree of impairment of sensibility over the whole right side of the body, but over the painful area the impairment reached a very high degree. She said that she had suffered so much from pain that she had lost twenty pounds in weight within the last year.

XXXVIII.

Neuralgic Pain in Arms; Paraplegia, Remitting and Exacerbating by Turns.

A laboring man, forty years old, had suffered for several weeks from severe neuralgic pains, radiating down the inner side of the right arm and into the little and ring fingers. These pains extended later to the corresponding area of the left arm. After they had been a source of trouble to him for a few days, he was crossing the street one day when his knees gave way and he fell suddenly to the ground. On trying to rise, he found he had almost completely lost power in his legs, while at the same time he felt numb and "dead" below the waist. He thought there was, perhaps, momentary loss of consciousness. For the next few days he was able to be around the house with the aid of crutches, but grew gradually worse, so that in three weeks his legs were powerless and he was obliged to remain in bed. During this period he suffered from severe pain in his arms and legs, and it was found that they were tender on moderate pressure.

After four months of medical treatment he began to improve. The pain lessened, and he regained some power in his legs. Suddenly he had a relapse followed by another period of improvement, and this sequence occurred once more, two or three months later; but the final improvement was not complete, and he found his legs getting more and more rigid.

Ever since the first attack there had been more or less disturbance of micturition, and a catheter had been frequently used. The bowels were very constipated. There had been no remission in the pains in the arms for several months before he entered the hospital, and hypnotics were used almost every night to secure sleep.

Examination showed the right pupil to be slightly larger than the left, but that both reacted normally to light.

There was marked atrophy of the right forearm and of the intrinsic muscles of the right hand, with diminished grasp.

Sensibility to touch and pain was much diminished below the second rib on the right and third rib on the left, while temperature sense was absent over these areas.

The legs were in a state of spastic paralysis. The patellar-reflexes were equal, but much exaggerated. The Babinski-phenomenon and ankle-clonus were present on both sides.

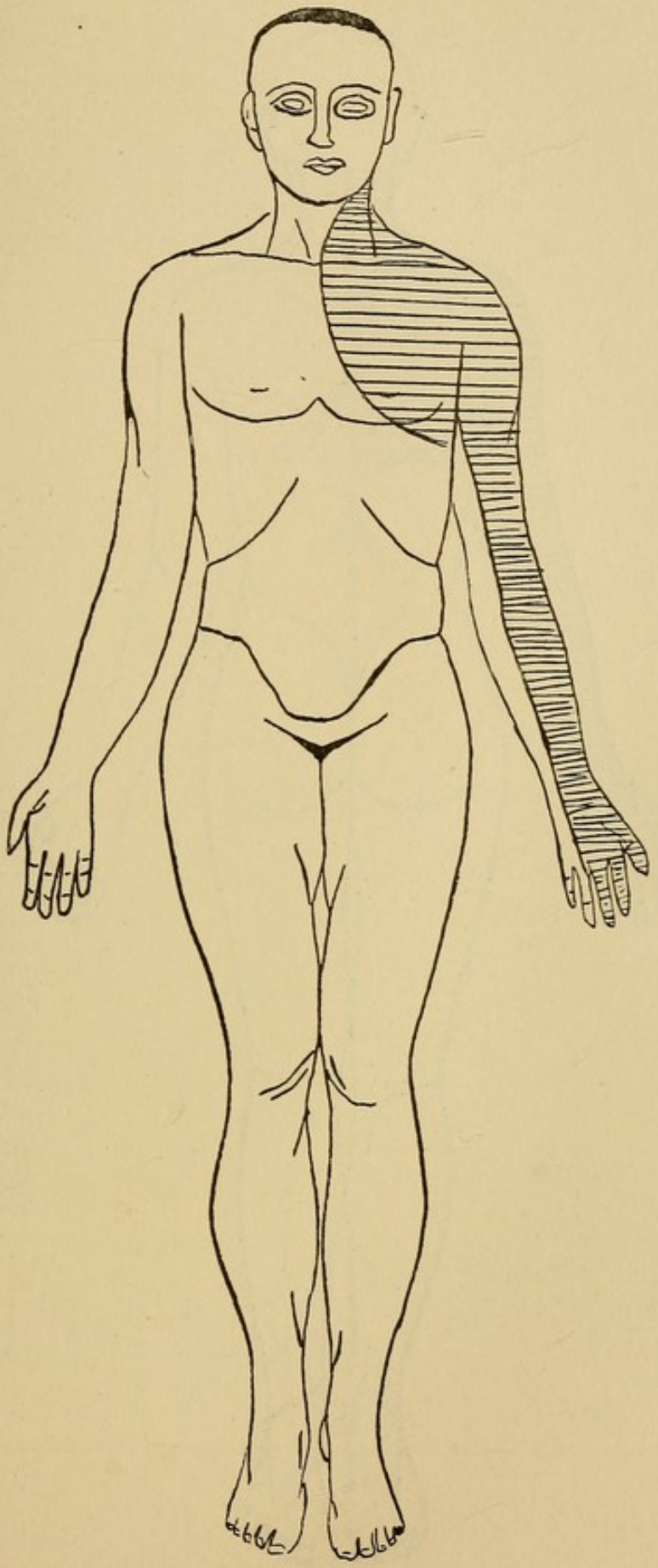
The temperature was normal. The urine examination showed nothing abnormal except the presence of some bladder elements in the sediment.

The patient denied having had syphilis, but admitted that he had had gonorrhœa several years previously. Iodide of potassium was given in increasing doses, and resulted in relief of pain and some improvement of sensibility.

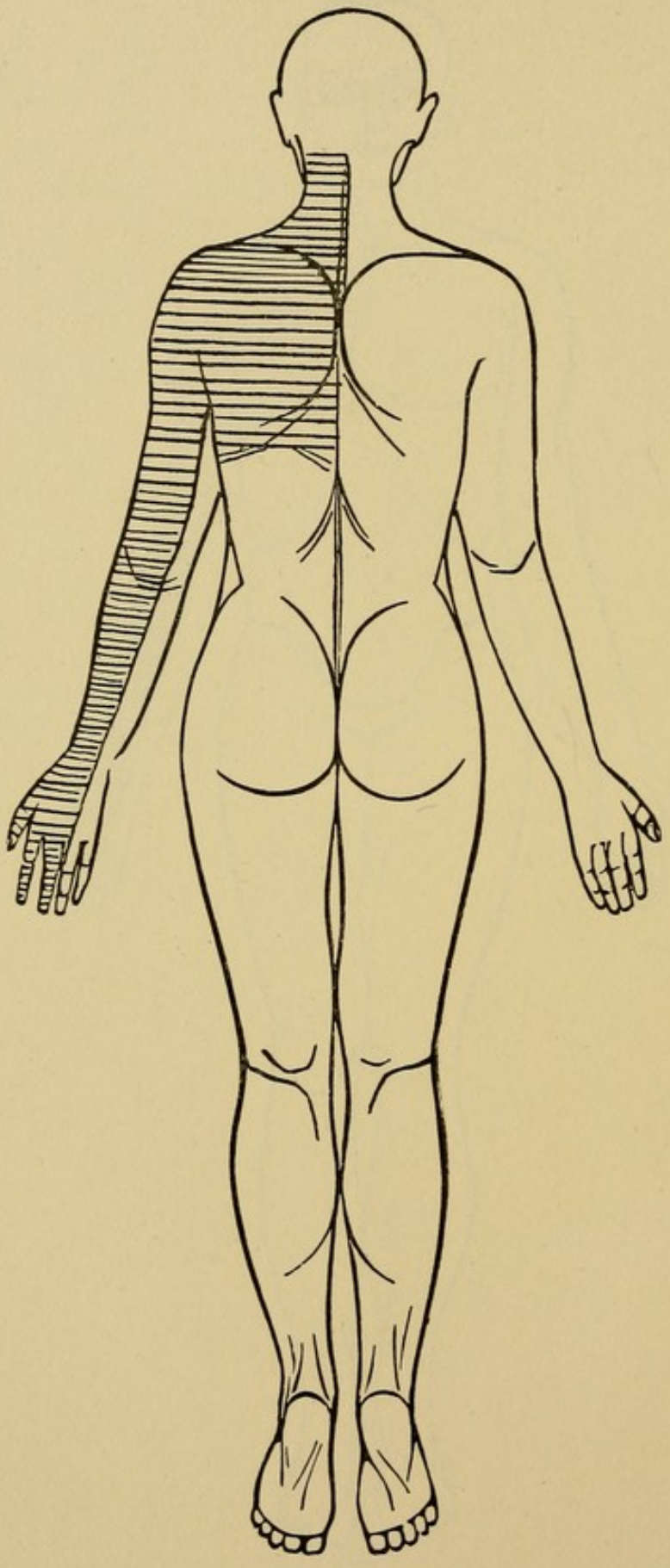
XXXIX.

Pain in a Definite Area of one Arm.

One morning in March, 1902, a laundress, about forty years old, came to me complaining of severe pain in the left arm. She said that seven weeks previously she had been confined to her bed for three weeks with pain in the region of the left shoulder, which was increased by movement of the arm or by inclining the head toward the right. The shoulder was not red or swollen, but was tender on press-



CASE XXXIX.
Showing Area of Anæsthesia.



CASE XXXIX.
Showing Area of Anæsthesia

ure. The pain had not been so severe in the shoulder during the last four weeks; and she had been able to be about the house, but could do no work on account of sharp, cutting flashes which radiated down the outer side of the arm and into the thumb and index finger. This had kept her awake for so many nights that she felt thoroughly exhausted. Besides the pain there was a "numbness" of the affected area, which had been present from the first.

This patient had been married ten or fifteen years, and had had two miscarriages and one healthy child. She used tea in moderation, alcohol not at all.

Examination.— The head is held inclined toward the left shoulder by spasm of the neck muscles of that side. Any attempt to elevate the chin, rotate the head, or bend it to the right, is accompanied by intense pain in the arm. There is no tenderness along the spine, and no kyphosis. The heart and lungs are normal.

Tests for disturbance of sensibility show complete anæsthesia and analgesia with loss of thermal sense, over the areas indicated in figure by ruled lines, while sense of position is absent for the left thumb and index finger. The grasp of the left hand is much weaker than that of the right, the dynamometer showing L = 10, R = 42. There is considerable tenderness down the outer aspect of the left arm, not limited to nerve trunks. The patellar-reflexes are normal.

The patient was fitted with a high, stiff collar which supported and immobilized the head as much as possible. In two weeks she was much improved, and in six weeks the pain was entirely gone, though the disturbance in sensibility still remained.

XL.

Injury in Cervical Region; Paresis of Limbs and other Serious Symptoms; Sudden Improvement at the End of Fifteen Months.

[Case reported by Dr. G. L. Walton.]

A. W., cook, single, thirty-five years of age, was admitted to the Massachusetts General Hospital in the service of Dr. J. C. Warren, with whom I saw him, from time to time, during his stay. He was seen also by a number of other physicians, including Dr. J. J. Putnam and Dr. M. H. Richardson.

The history was as follows: On Jan. 3, 1885, he fell down a flight of steps, backwards, striking his neck on the edge of a door-post. His head was thrown forward with the chin elevated, in which position it remained up to the time of entrance. He lost consciousness for six hours, and remained in bed about one month, complaining principally, apart from the displacement and rigidity of the head, of general weakness, numbness, and stiffness of the legs when getting up, and a slight twitching in the hands. There was no trouble in breathing, from the first. He entered the hospital March 30, about two months after the accident. He complained at that time of pain in the shoulders and across the back, and of gradually increasing weakness. The head was projected forward with the chin elevated. There was a marked prominence over the fourth cervical vertebra; above this point the spinous processes of the vertebræ were less prominent than normal. Digital examination of the throat showed a projection in the posterior pharynx. The patient was able to walk, but with a spastic gait. Ankle clonus was present. The patellar reflex was so greatly exaggerated that tapping the tendon produced a continuous clonus. Respiration was normal. There was at that time no objective disturbance of sensation. The grasp was weak on both sides, as well as extension of the wrist. The supinator longus was

strong, as were the muscles of the upper arm, excepting the triceps on the left, which were feeble. There was no marked reflex in the arm. Every attempt at movement of the legs caused tremor. Flexion and extension of the thigh were fair on both sides. The tibialis anticus and gastrocnemius were moderately strong, the peroneal muscles weak. The legs were rigid. There was no atrophy or coldness. The plantar, abdominal, and cremaster reflexes were normal. The pupils were equal, and reacted to light. There was nothing abnormal about the face. The respiration was 20, the pulse 86, the temperature normal.

Three days after, an operation was undertaken. The patient was etherized. The cervical vertebræ were extended by pulling the head in one direction and the body in the opposite. No distinct snap was felt, but the prominence of the vertebræ was considerably diminished. The neck was held in position by bandaging the head and body to a broad leather splint. The second day after the operation there appeared to be an improvement in the patient's condition. The grasp was stronger, and the ankle clonus less marked. On the fourth day the apparatus was omitted. On the sixth day careful examination showed no improvement over his previous condition. On the sixteenth day the patient was gradually losing ground: he was growing feebler, and the cervical prominence, together with the peculiar manner of holding the head, had returned. Sensation was impaired in legs and arms. One month later the condition was not changed, excepting in the direction of an increased feebleness. After two months the patient could not stand on his feet without assistance. After two and one-half months the head of the bed was elevated, and extension was applied to the neck with halter and weights. This apparatus was removed five days later. At the end of three months the patient was gradually failing. Bladder symptoms had appeared, in the form of retention. There was tonic spasm of the legs. Sensation in the legs was lost to the groin, and

in the arms to the middle of the upper arm. Four months after operation the patient was completely helpless, and unable to grasp anything firmly in the hand. He was much troubled by constipation, and suffered at intervals from retention, which required the use of the catheter. At the end of four months and one-half, further surgical interference was considered unadvisable; and he was discharged from the hospital, but was allowed to remain at the Convalescents' Home until ten months after the accident, when he was taken to the almshouse, where he remained without improvement for three months longer. At the end of this time — that is, about fifteen months after the accident, while taking a lukewarm bath, ice-cold water being meantime thrown upon his back by a syringe — he suddenly felt a sensation like an electric shock. He was rubbed down and put to bed, and the galvanic current was applied to all extremities.

The next morning he found he could rise in bed. Cold water was thrown, after this, in large quantities on his back every other day, after which the galvanic battery was applied. Improvement was steady and rapid, and within a month he was at work in a restaurant. The head had become gradually replaced during this time. No further symptoms appeared.

The patient was carefully examined three years after the accident. The gait was normal and free, the tendon reflex was normal. There was no rigidity nor ankle-clonus. All movements of the extremities were perfect, and the lightest touch was everywhere felt. The head was held rather stiffly, canted slightly to the left, with the chin elevated and turned to the right, the whole head being held somewhat forward. The fourth and fifth cervical vertebræ were rather prominent, though no more than is sometimes found in health. The spinous processes above were distinctly felt. There was no prominence in the posterior pharynx.

XLI.

Entire Paralysis of the Legs, etc., of Sudden Onset, following Injury.

This patient was a young man of twenty-five, a splendid, athletic-looking fellow. Two weeks before he was examined, he went bathing off a pier with his friends, and dove three successive times into the water. The second time he struck rather flat, and felt as if he had sprained his back a little; but the effects of this seemed to have passed away before he reached the surface of the water. The third time he dove without difficulty; but, on trying to turn in the water to rise to the top, he found, to his horror, that his legs would not move, so that he had to paddle himself up with his hands alone. Ever since that moment his legs have been paralyzed, and not only that, but the bladder and rectum have been in the same condition. No material improvement has taken place, but, fortunately, there has been no pain at any time.

The bodily temperature was 103°F. the day after the injury, but had fallen to 99° by the end of the first week. Then it rose for a while, and by the end of the second week it was 103°. This was perhaps due to the fact that gangrenous sloughs had formed on the heels. The knee-jerks were absent both at first and at the end of the second week, and presumably later. The sensibility of the skin was lost for contact and pricking, from the third rib down; and the line of demarcation went round the chest at an angle with the ribs, perpendicularly to the axis of the body. Not only this, but there was an area of anæsthesia along the inner surface of the left upper arm and forearm down as far as the hand, and impairment of the sensibility over the same area of the right arm. He was not himself aware of this change in sensibility of the arms, though he had noticed that his left arm "went to sleep" sometimes without apparent cause. The motions of the arms in general were good, but he could not

easily touch his little finger and thumb nor fully extend the fingers, and the interosseous muscles were absolutely wasted. Incomplete priapism had been present from the first. As time went on, these conditions remained for the most part unchanged or became intensified. The use of the arms being preserved, he was able to get about with a rolling-chair, and to employ himself quite actively.

XLII.

Paraplegia of the Legs and Many Other Nervous Symptoms, following a Slight Accident.

On Dec. 7, 1882, a man forty-nine years old was travelling in a train which met with a slight accident, through which its course was suddenly arrested. The patient was sitting in the front part of his car, with his face toward the engine, not suspecting any mischance, when he found himself thrown violently forward toward the seat before him, and then back upon his own seat. The cushion of his seat had been by this time displaced by the jerk, and the patient struck the edge of it with his back, and then came down hard onto the floor and for a moment was slightly stunned so that he did not know where he was. He was helped out of the car, suffering a good deal of pain in his back, but, nevertheless, decided to go on with his journey, although feeling faint and sick. On arriving at his destination, he was nauseated and vomited, but pulled himself together, did his business, and returned home, and the next day he went to his office, although weak and miserable and complaining of pain in the back and back of the head. His feet and hands felt constantly cold, and he had a strange sensation running down through the arms. He also felt gloomy and depressed, and at times would burst into tears and exhibit signs of great nervousness. His sleep at night was poor and disturbed by hallucinations, and, as time went on, he lost color and strength. The temperature was, for a time, rather below normal (97° to 98°F.), and the pulse slow (60).

One morning, about a month after the accident, while the patient was still in this miserable condition and, indeed, still growing worse, he found when he tried to get out of bed, that he could not stand. An examination that evening revealed the following conditions: —

The voluntary motion of the legs was greatly impaired, but not lost for any given movement. He could draw them slowly up while lying in bed, and push them slowly down; but he could not turn over in bed. The motions that he did make were jerky and uncertain in character. The sensibility of the skin over the legs below the knee was very much diminished, so that a pin could be thrust through the skin without causing pain, although it did cause a sensation as if of slight pinching. Light touch of the finger was not felt, but deep pressure was everywhere noticed. Above the knees the sensibility was good, and the change from the sensitive to the insensitive areas was fairly abrupt.

Any jarring of the legs during the examination made the patient cry out nervously with pain, which was generally referred to the back. The muscles of the legs were moderately rigid, but yet there was no involuntary jerking at night and the knee-jerks were not greatly increased. The impairment of sensibility was more complete over the right leg than over the left, and not only this but the sensibility of the right arm and right side of the face were also much below the normal, and the field of vision of both eyes was diminished toward the right. The hearing of the right ear was also less good than that of the left, both for air-conduction and for bone-conduction. At first all these signs increased in severity, so that after a few days the patient could scarcely move the legs at all. Yet even then it was noticeable that when the leg was raised in air by the hand and then the hand removed, it would not drop at once onto the bed. The nervous condition remained the same, and the general nutrition suffered greatly. There was no disturbance of micturition, but the quantity of the urine was

very much diminished, as indeed it had been, to a considerable extent, ever since the accident, while the desire for micturition was greatly lessened.

The faradic reaction of the muscles of the legs remained wholly unimpaired, but the patient did not feel the contraction of the muscles below the knee nor the stimulation of the skin with a wire brush attached to the faradic battery.

By the end of the week after the onset of the paraplegia, he was able to walk about with crutches; but, when he did so, the right leg dragged on the ground, not being moved even at the hip joint, whereas the left leg had by that time recovered a certain amount of strength. Finally, the patient abandoned his crutches, but not until after two years had passed; and, when examined at the end of eleven years, he was still pale, weak, and miserable, though not paralyzed.

XLIII.

Paraplegia.

A girl of twelve was attacked while at church by severe pains about the waist, rapidly increasing in severity, together with sensations as of approaching loss of power in the legs. In walking home, the limbs were weak and dragged. Within four hours there had developed complete paralysis — according to the patient a flaccid paralysis — of motion and sensation in legs and lower trunk. Involuntary discharges of urine and fæces occurred. There was no essential change for four weeks, though there was a slight return of bladder sensations, but shortly afterwards there developed a bedsore on the right thigh (right decubitus up to that time), followed by others on left thigh and sacrum, in accordance with change of position in bed. These healed successively, but at the time of examination — five months after onset — their sites were still marked by deep eschars and reddenings. There has been slow but continuous improvement as to sensation and sphincters, and the status is as follows: —

Slight general emaciation and small amount of atrophy of leg muscles. Thighs adducted so strongly as to be partly crossed; legs flexed on thighs, and both held in this position by firm contractures, which require considerable force for their reduction. Any sudden passive motion or jar throws the legs into brisk spasm, the left especially tending to assume a position of full extension, with foot flexed. These reflex movements are sometimes so extensive as to involve the trunk.

Voluntary motion of legs and lower trunk is lost, and it is only with difficulty that the patient turns herself in bed.

As to sensibility, it is doubtful if there is any absolute loss, either tactile or for pain; but there is very marked impairment up to the nipples in front, and on the back to the ninth thoracic spine on the right, and to the sixth on the left. At these levels appears suddenly a narrow zone of hyperæsthesia, beyond which the sensation is normal. The impairment is decidedly greater over the legs than over the trunk.

Reflexes: On account of spasm the knee-jerks could not be examined. Plantars: typical Babinski left, no reflex on right. Marked ankle-clonus right and left. The bladder becomes distended, with subsequent involuntary dribbling, unless the patient is catheterized. There is some pus in the urine, showing a tendency to decrease in amount under treatment.

XLIV.

Paraplegia of Acute Onset, in an Elderly Lady.

A lady of sixty-eight, living in comfortable circumstances and with a record of good health, was suddenly attacked, without apparent cause, with a sharp pain in the back, and then, to some extent, in the legs below the knees. Almost at the same time she felt her legs getting weak, and in a few hours there was complete paralysis of the legs for both sensation and motion. The temperature was not taken at the first visit, but ever since then had been normal. The

pain disappeared with the onset of the paralysis. All the reflexes were found to be lacking from the first. An examination made on the day after the onset showed a complete absence of cutaneous sensibility for all parts below the groin, except over the front and inner surfaces of the thighs. In these areas, and over the abdomen as high as the umbilicus, the sensibility was considerably impaired, but not wholly lost. Later there was slight improvement in the tactile sensibility, but none as regards pain sense. Hot and cold objects excited a vague feeling, but she could not discriminate between them. As time went on, all the muscles of the legs became considerably wasted. There was incontinence of urine and fæces. No essential change took place later in the patient's condition, and she died in the following year. There was no *post-mortem* examination.

XLV.

Progressive Paraplegia: Recovery.

In July, 1891, a physician's advice was sought by a single man, thirty-five years old, on account of difficulty in the use of the legs, so great that he was confined to the chair. He stated that he had been well up to the previous January, when he first noticed a "numbness" on the outer side of one foot, which he attributed to having walked barefoot during a boating trip in Florida.

At this same period he had had a headache for a week, which troubled him only at night, but was then so severe as to keep him awake.

In the latter part of March he had begun to find walking difficult. In April severe pains in the back came on, so severe that one night he tore his sheet with his teeth in desperation. One physician in good standing told him he had muscular rheumatism, another said it was the "grippe"; and thus precious time was lost.

Meantime the "numbness" had spread upwards, the

right foot and leg had become almost helpless, and the left was getting weak. Early in June a third physician again diagnosticated muscular rheumatism, and gave K I grs. X., t. i. d., but later, perhaps from a change in diagnosis, increased the dose to grs. XXX. t. i. d., by which, perhaps, the pain was relieved, though the paralysis continued to increase, and a girdle sensation developed. The bladder control was slightly impaired. A physical examination gave the following results: The motions which were lost were those at the right ankle, and those involved in drawing up the right leg toward the body. All other motions were preserved, on both sides, including those of the toes, but all were excessively feeble, those of the right leg more so than those of the left.

The cutaneous sensibility was much better for the right leg than for the left, as regards contact, pricking, and temperature; and, in fact, the right leg was hyperæsthetic for pricking. On the other hand, the sense of position was more impaired for the right leg than for the left.

The knee-jerks were exaggerated on both sides, especially the right, and ankle-clonus was present.

The patient admitted gonorrhœa several years before, but denied knowledge of chancre. A typical syphilitic psoriasis was, however, present on the palms and soles.

Treatment.— He was told to increase the potassium iodide rapidly to 300 grains daily, and was given mercurial ointment, one drachm daily, by inunction, for a short period.

Course.— Steady improvement and almost complete recovery, except for slight stiffness and awkwardness of the right leg, and loss of sexual power, which still remained even several years later.

The treatment has been continued, in a modified form, most of the time ever since.

XLVI.

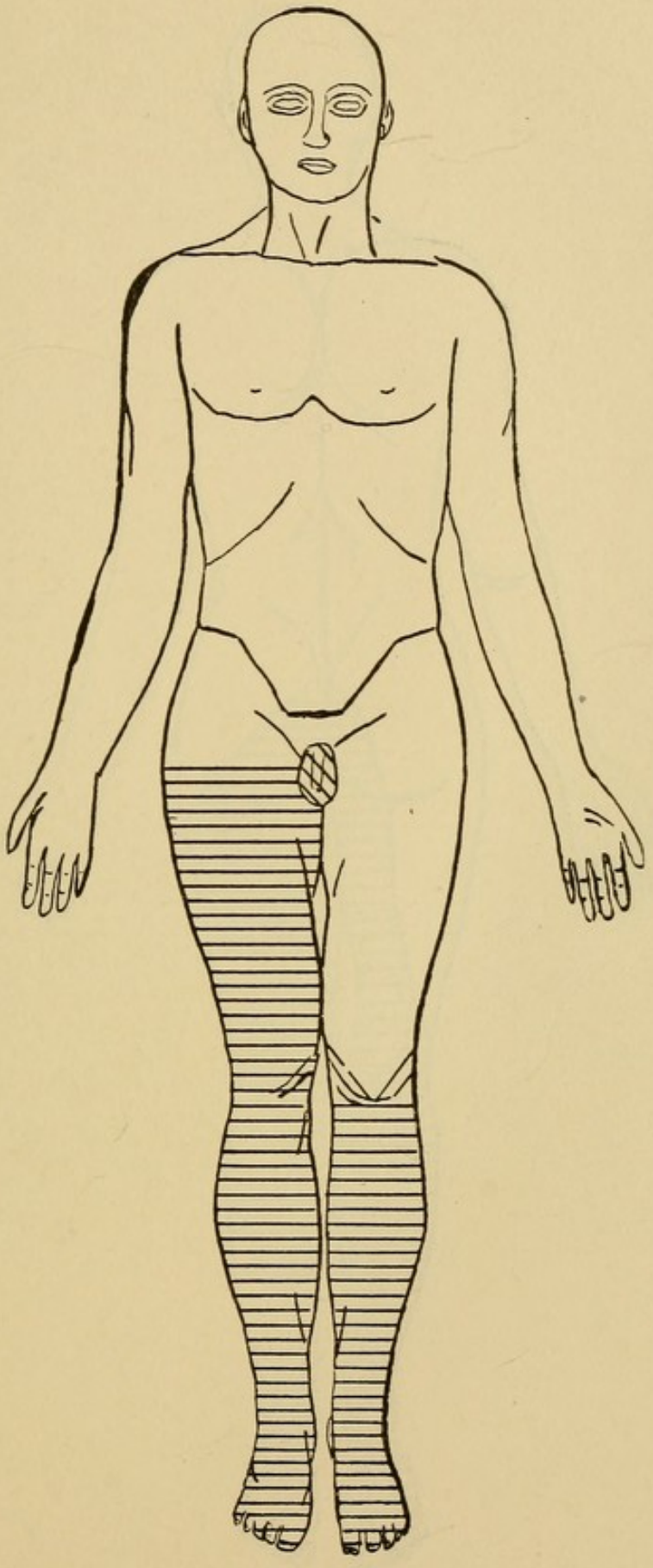
Paraplegia of Sensation and Motion.

A young man of twenty-eight, unmarried, had always been well and vigorous until three weeks before he consulted a physician. He had had a venereal sore, without secondary symptoms, and there was some tuberculosis in the family. Three weeks before he sent for the physician he began to have numbness in the soles of the feet, and this had slowly crept up the legs. There was no prickling, but rather a feeling of compression. At about the same time he began to have trouble in passing water, which increased so that for three days a catheter had to be used, and its use has been continued. He was able to walk a short distance up to within three days. Now he is confined to his bed, and has no control of his legs nor power to raise them from the bed. For a week he has had night sweats. The tactile sensibility is diminished up to the umbilicus; the other forms of sensibility are fairly good. The legs are weak, and the power to co-ordinate movements in them is much diminished. He cannot stand without support, and closing his eyes increases his difficulty in standing. The electrical reactions are normal. The plantar reflex is diminished; the abdominal and cremaster reflexes are absent. The knee-jerks are lively, and in the left leg there is a tendency to ankle-clonus.

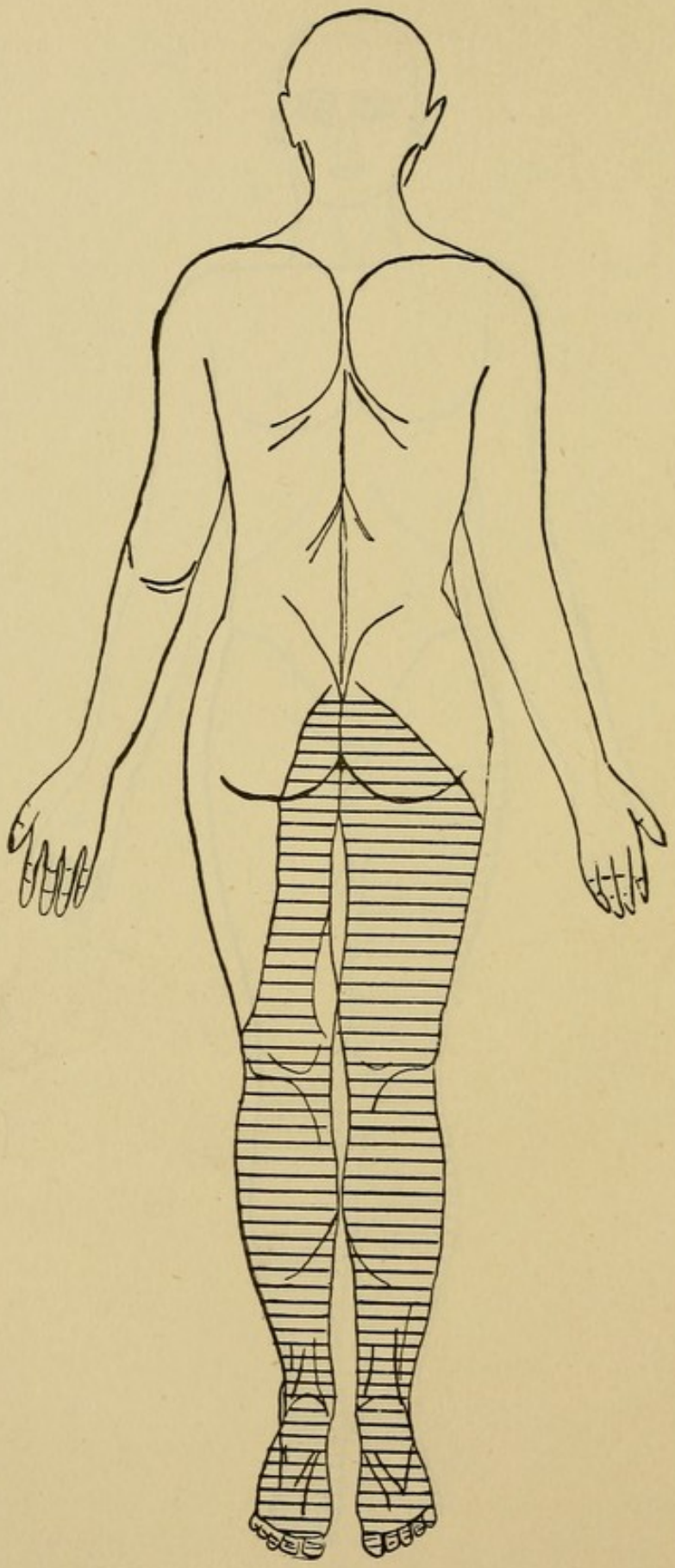
XLVII.

Paraplegia of Legs after a Fall.

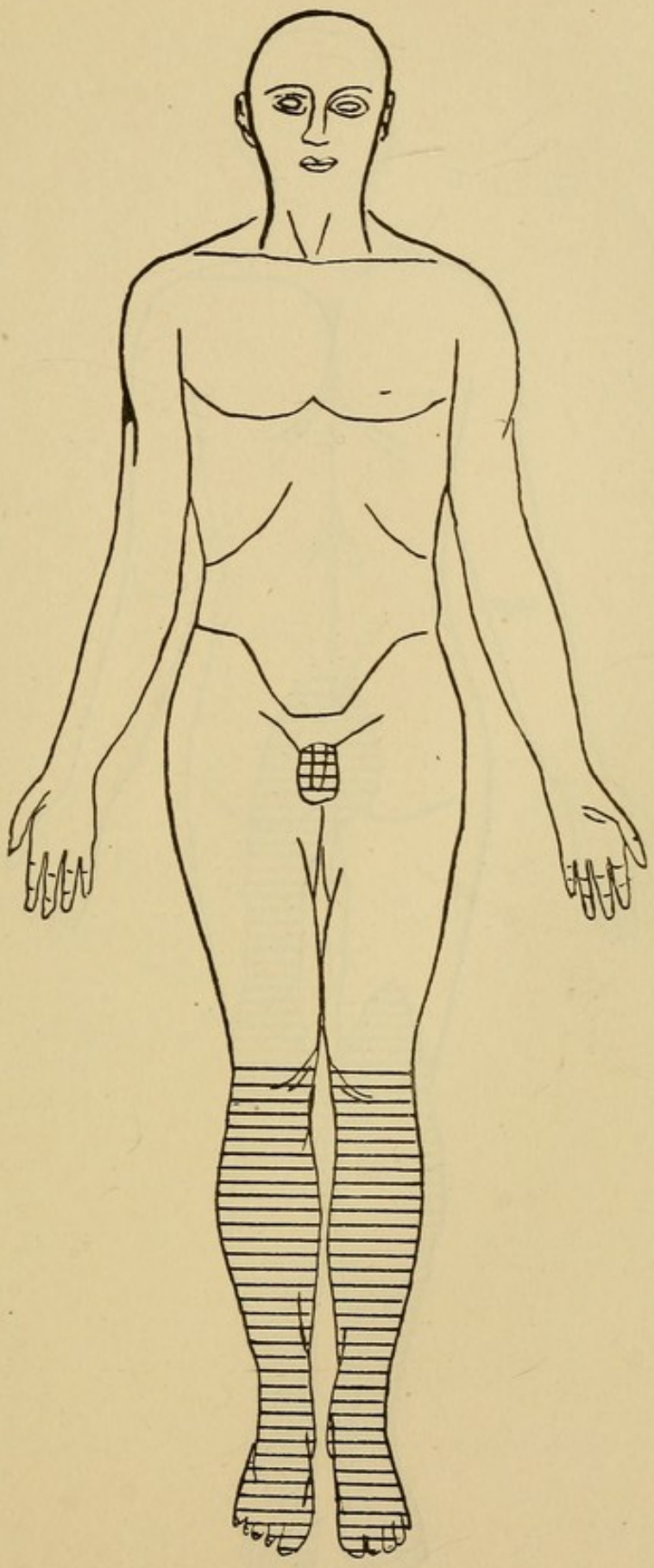
A man twenty-eight years old fell from a second story window to the ground, while on a drunken spree, and was unable to get up on account of loss of power in both legs. It was not known what part of the body received the brunt of the fall, but there was a large bruise on the top of his head.



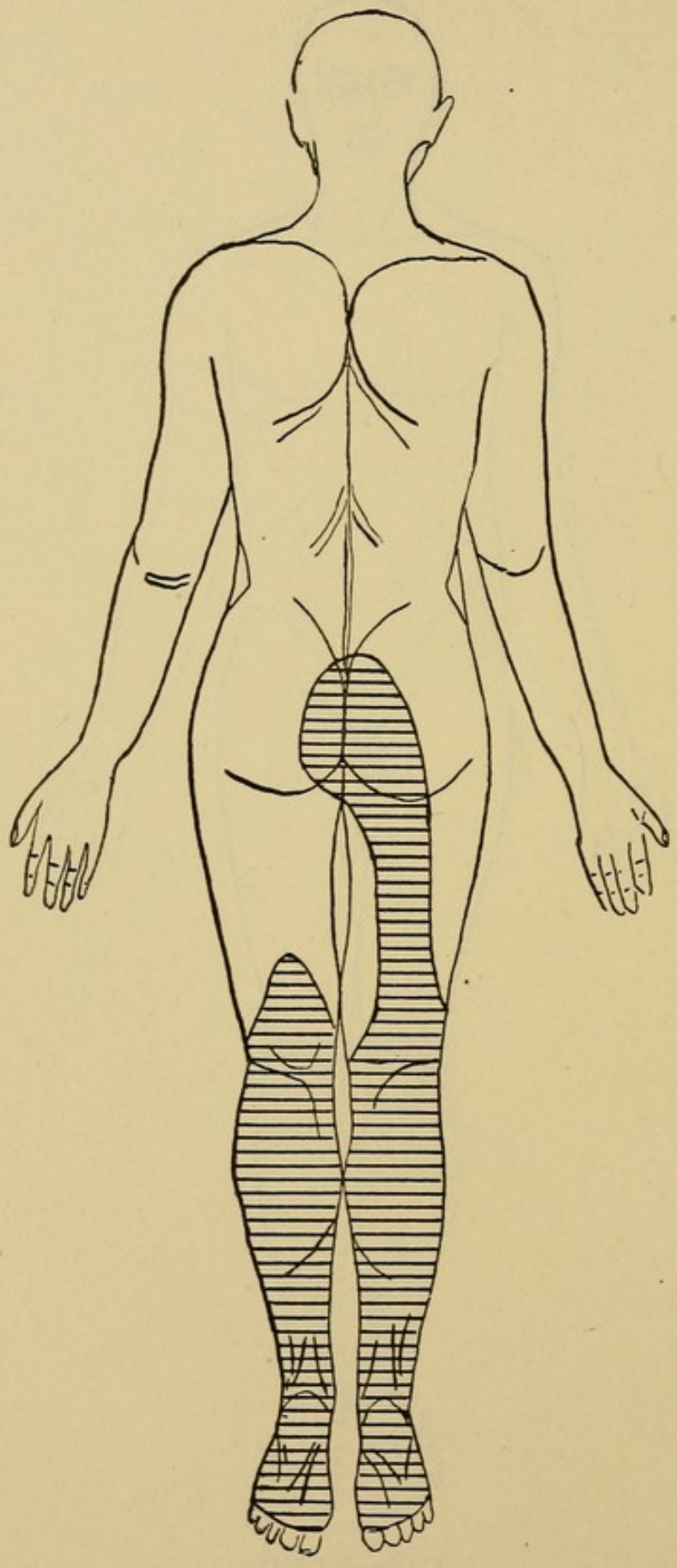
CASE XLVII.
(Before Operation.) Showing Area of Anæsthesia.



CASE XLVII.
(Before Operation.) Showing Area of Anæsthesia.



CASE XLVII.
(After Operation.) Showing Area of Anæsthesia.



CASE XLVII.
(After Operation.) Showing Area of Anæsthesia.

The mental condition was somewhat confused, but whether from the fall or as a result of alcohol could not be determined. The patient complained constantly, however, of severe pain in the small of the back. The pupils were normal in size, equal, and reacted well to light. The arms were unaffected. The legs were paralyzed; and there was loss of sensation, as indicated in the diagram. The patellar and plantar reflexes were absent, and incontinence of urine and fæces was present. The abdomen was rigid, but not tender. The first lumbar vertebra was prominent, and moderate pressure here caused pain. The temperature was slightly elevated, but the pulse of good quality, and not very rapid.

Operation was considered advisable, and was performed the following day. Several spicules of broken bone were removed; but the dura which was thus exposed seemed to be normal, and was not bulging. On incision of the dura there was an escape of cerebro-spinal fluid, but no blood nor clots.

Recovery from the operation was good, but for several weeks the patient suffered from pains in the legs. There was some improvement in sensation on the second day, but none afterward. Five months later some motion of the left foot was possible, but, in general, the paralysis remained the same, and the patient was able to get around only by the aid of a wheel-chair.

XLVIII.

Spastic Rigidity of the Legs, of Gradual Onset.

This is the case of a male patient, unmarried, and fifty years old. The chief complaint at the time of the first examination was difficulty in walking on account of rigidity of the legs, which was so great that he could only progress by very short steps. He complained also of a continuous burning sensation in the right groin, a sense of coldness in the buttocks, and a numb, tickling feeling in the soles of the feet; and he asserted that, when he put his feet into warm

water, he could not easily recognize the temperature. Micturition was increased in frequency, and there was a slight loss of bladder control. There was no girdle sensation, and the hands were unaffected. There were no symptoms referable to cranial-nerve disorders except that his hearing had become somewhat impaired. Twenty years before he had had a syphilitic infection, for which he had had thorough treatment in Germany. The difficulty in walking had begun two years before the first examination, and the motor symptoms had preceded the sensory symptoms by a considerable time, and continued to form the most prominent and important element in the case, the sensory disorders being relatively insignificant throughout.

On physical examination there was found, besides the symptoms above noted, an exaggeration of the knee-jerk on both sides, and ankle-clonus on the right side; also, very slight diffuse impairment of sensibility. In spite of all treatment the patient grew gradually worse and became wholly paralyzed in the legs, which remained, however, in a spastic and contracted state. The girdle sensation became also more marked. Thorough specific treatment was unavailing.

XLIX.

Increasing Weakness of Both Legs, associated with Paræsthesia and Sense of Coldness.

The patient is a married man of forty-five, of good habits and free from signs of specific disease. The weakness of the legs began about five months ago, and has been of very slow increase, though now he walks with considerable difficulty even with the aid of a crutch. The weakness and also the numbness are worse on the right side than on the left. The sphincters are not paralyzed. Shortly before these symptoms began the patient was troubled with a deep-seated pain through the right half of his chest, and for the past five months there has also been a peculiar sensation

across the abdomen from time to time. The legs tend to draw up and jerk involuntarily, even when the patient is at rest. His health has never been very good. He was a seven months' child, and very small at birth. Throughout his infancy he was very delicate and he has never been robust, though looking well, and able to serve in the army for several years during the war.

On physical examination it is found that the nutrition of the muscles of the legs is good. The sensibility to contact and pricking is slightly impaired over both legs, especially the right, though this is only discoverable on close examination. He says that contact of the bed-clothes gives rise to an unnatural sensation in the right foot. The knee-jerks are both highly exaggerated, the right more than the left. Ankle-clonus is present on both sides.

Examination of the back shows a slight prominence, embracing the second, third, and fourth vertebræ. There is no sensitiveness on pressure over these prominences, and no pain is excited when the patient allows himself to come down hard on his heels. The heart is in normal condition.

L.

Pain in Left Side and Groin, gradually increasing, and made worse by Motion. Gradual Impairment of the Use of the Legs, with Disturbance of Sensibility and Exaggerated Tendon-Reflexes.

A colleague of the writer was visited by a lady who came to him suffering excruciating pain in both flanks, but especially in the left. In fact, the pain at the time of her visit was so severe that she made her way into his office bent over double, and almost on her hands and knees. He asked me to see her a little later, and the following history was obtained: —

She had been a strong, healthy woman until about a year previously, when she began to have a pain in the left side, in

the neighborhood of the descending colon. This was referred by the physician whom she consulted, to a condition of neurasthenia and indigestion, and she was advised to take a trip into the country. This she did, but while away she grew steadily worse, and fell gradually into the condition described. At that time there was but little disturbance of motion of the legs; but this steadily increased, so that within a few months after the first visit above alluded to she could not stand alone. The sensibility of the skin was at first much less affected than the motion, but, little by little, this too became involved as high as the groin, and finally, though to a less degree, as high as the navel. The back was less involved than the abdomen, as regards sensibility, at the levels indicated. The increase of pain through motion was first noticed a few months after her illness began, on the occasion of stepping into a carriage, but it became finally so marked that even turning the head to one side or gaping widely would precipitate an attack of pain. The sphincters were not affected at first, but soon became involved to a slight degree. The abdominal reflex was absent. The subsequent history of the case will be given in the course of the discussion.

LI.

Severe Pain around the Body, increased by Movement; Paraplegia, of Gradual Increase; Death.

This patient was a woman, fifty years old, with a record of good previous health. About the middle of May, 1889, she began to be attacked with severe pain and "dragging sensations" in the right side. These pains grew steadily worse, and were increased by every motion or by lying on the left side. After a week or ten days the pain remitted considerably, though only for a short time. Very soon it spread to the left side, and eventually disappeared wholly from the right side. It also involved the abdomen at the

level of the lower ribs. She gained some relief by sitting up in bed, propped by pillows and with the chin resting on the chest. Any attempt to held the head erect or to take a more recumbent position greatly increased her suffering. Solid food caused nausea.

Up to August 4 there was no loss of power in the legs, but the next day this came on, and rapidly increased. On the whole, the pain grew worse, but occasionally it would remit, even completely. A sense of numbness was felt in the lower part of the body below the thighs.

By August 29 she was unable to walk, though movements of the legs in bed were still possible. The abdomen had become distended with gas, and peristalsis was diminished. The knee-jerks were found diminished.

An electrical examination, made August 23, showed a marked diminution of reaction to the faradic current, of all the muscles of the legs and thighs, and such contractions as occurred were slow and feeble. The abdominal muscles did not react at all. Marked impairment of sensibility in all forms was present over both legs and over the abdomen. Even deep pin-pricks were generally not felt in the legs. The anæsthesia of the abdomen was less complete, but mounted higher on the left side than on the right, extending there to about the ninth rib. The epigastric reflex was preserved on the right side, but lost on the left.

The patient subsequently failed steadily, and died in about a month, deep bed-sores having formed on the sacrum and the heels.

The record of the *post-mortem* examination will be given in connection with the discussion of the case.

LII.

Spasm of Muscles about the Hip following Injury. Hemi-anæsthesia.

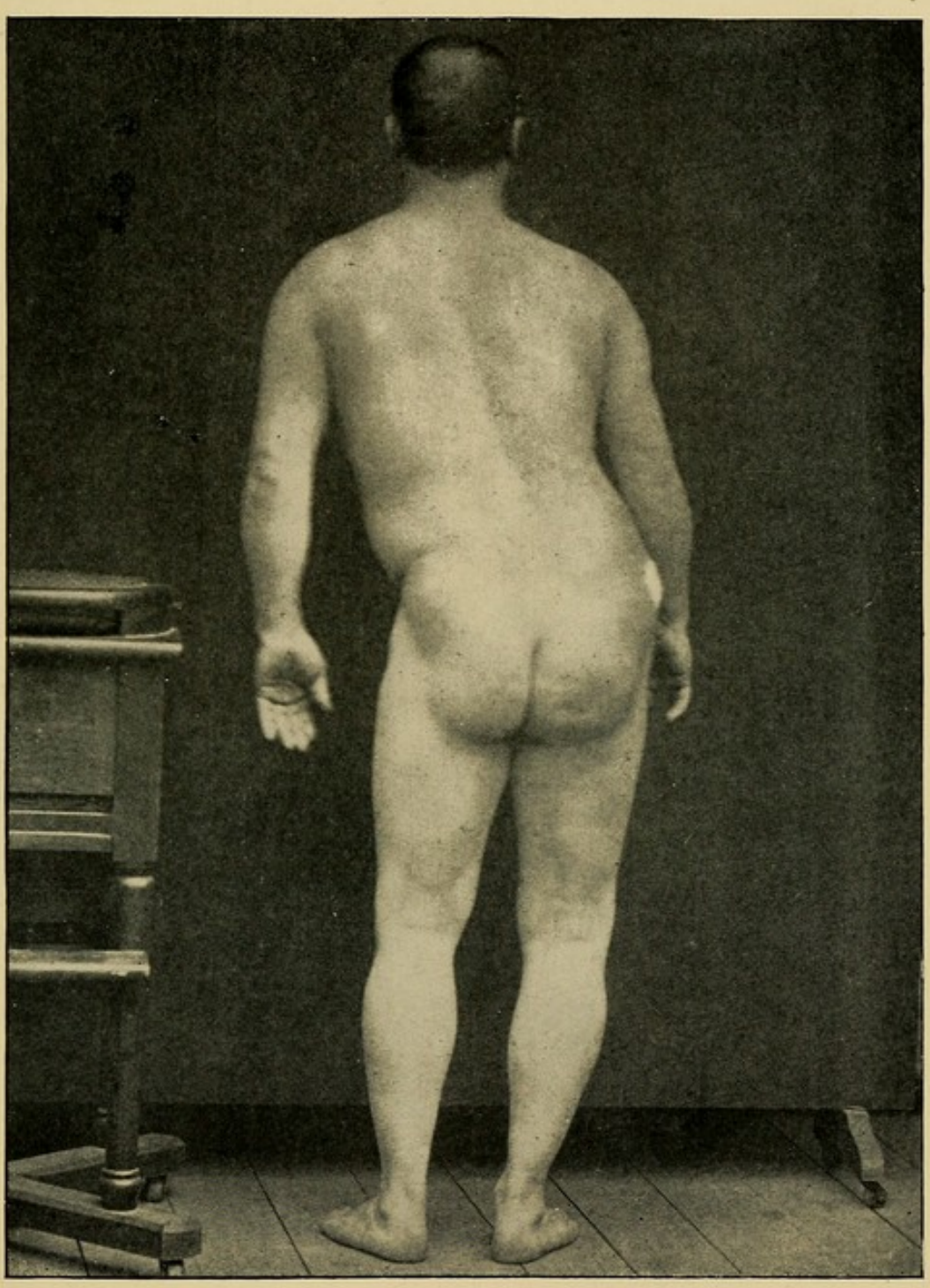
A middle-aged woman of no great intelligence suffered a fall of moderate intensity, but was able to walk home, though in a highly nervous state, which persisted continuously. Her left leg, which had been slightly injured about the hip, became very painful, the pain being increased by the slightest passive movement. The muscles about the thigh and pelvis were constantly contracted, as if to prevent motion at the hip joint, and, as a result, the pelvis was strongly tilted upward on the left side, the neighborhood of the left hip joint becoming very prominent. The skin over the left leg, and to a less degree over the whole left side, including the arm, trunk (left half), and face, became more or less anæsthetic, except about the hip, where it was hyperæsthetic. As the case progressed the patient became able to get about on crutches, but dragged the left leg, not moving it even at the hip joint. Medico-legal complications were present. Eventually she recovered, but not until after several years.

LIII.

Pain along the Course of the Sciatic Nerve, associated with Scoliosis and Muscular Spasm.

A sailor, thirty-eight years old, awoke one morning, after a hard day's work of lifting heavy freight, with a severe pain in the small of the back. This pain persisted four days, and then left the back, and made its appearance in the back of the right thigh, and extended down through the calf and into the foot.

While lying in bed, he was perfectly comfortable; but any attempt to sit up or walk brought on a "tearing" pain. There was a constant sense of tingling along the course of the sciatic nerve, and pressure over the sciatic notch caused the same pain as is experienced in walking.



CASE LIII.

The patient is a heavy, well-nourished man. He stands with a marked lateral curvature of the spine (see illustration), which is maintained by muscular spasm. Walking is associated with a pronounced limp of the right leg. There is an ill-defined swelling extending down the thigh from the right iliac crest, but palpation shows no change in the consistency of the tissues of this area from that of the surrounding muscle. The spine is perfectly flexible on bending forward. This condition persisted for four months unrelieved, though several courses of treatment were tried. Christian Science was finally resorted to, and resulted in a cure.

LIV.

Paralysis of Sphincters, with Impairment of Sensibility in the "Saddle Back" Areas of the Thighs.

A young lady, in a fit of mania, leaped out of a window on the second story of a city house into the yard below. Her fall was somewhat broken by clothes-lines, but she came down with such force as to seriously injure both ankles and to bruise the backs of the thighs and the buttocks on both sides. She was stunned for a moment, but quickly recovered consciousness, and screamed with pain and excitement when handled. It is uncertain how far she was disabled in the beginning, but the arms were apparently all right from the first, while the legs, although not wholly paralyzed, were greatly weakened. She was also unable to raise herself into a sitting position, in spite of violent efforts.

At first there was retention of urine, but this quickly gave way to a paralytic dribbling, and it was found that the vesical and rectal sphincters were both completely paralyzed. On this account the catheter had to be used from the first, and her distress was augmented by the fact that a severe acute cystitis very quickly developed.

She lay in bed three months, and during that time the muscles of the trunk and legs improved gradually in strength,

so that at the last she was able to walk across the room and out of the house with but little help. From that time to the present, a period of nearly two years, she has been slowly, but steadily gaining; and now the legs may be considered as having normal strength. The knee-jerks are absent, as they presumably were from the beginning. There is still partial paralysis of the sphincters of the bladder and rectum, so that the urine passes whenever she is making any strong effort, as in climbing, sneezing, or laughing, and the contents of the rectum escape whenever they are at all loose.

Examination shows that the anal sphincter is in a state of partial contraction, but gives way at the slightest pressure of the finger, and can easily be dilated widely. There is impairment of sensibility, in all its modes, over the so-called "saddle back" area,—that is, the buttocks, the posterior surfaces of the thighs almost to the popliteal space, and the perinæum and vulva. On the right side this impairment is much greater than on the left, so that a sharp and deep prick or an electric spark is scarcely felt at all, and not felt as pain.

The anal sphincter does not respond to even the strongest faradic currents, but does contract with a moderately quick motion under galvanic excitation, the effect of the negative and positive pole being nearly equal.

It should be said that from the first the patient has been aware that the passage of the fæces did not give rise to the normal sensation, and has also recognized the loss of sensibility of the skin. When a strong voluntary effort is made, the sphincter ani can, by the finger of the examiner, be felt to contract slightly.

In other respects the patient is now in perfect health.

LV.

Pain in the Left Leg and Foot, following, in general, the Course of the Sciatic Nerve; later, Paræsthesia and Loss of Power.

This patient was a gentleman of seventy, of fine health and strong character. The symptom that first troubled him was pain in the middle toe of the left foot, coming and going, and suggesting an antecedent sprain or hurt. For six months nothing else followed, and even this pain was not constant. At the end of six months the pain attacked him in the lower back, and ran down the posterior and outer portion of the left thigh and leg and into the outer half of the foot. When he walked, this portion of the sole felt as if he was stepping on small marbles. For a time the pain was so severe that he had to take laudanum daily. Then he was sent to Florida for change of air, and here he grew a little better; but while the pain lessened somewhat the muscles grew weak and wasted. Then the right leg became attacked in a similar manner, and there also the pain was mainly on the posterior and outer surface of the thigh. After the right leg became involved, the pain in the left leg became again more severe, and both grew so weak that walking was almost impossible. The extensor quadriceps cruris group of muscles became especially weak and also atrophied, so that going over the stairs was out of the question. Deep pressure over these muscles gave rise to pain. There was no disorder of micturition or defecation. The knee-jerks were soon lost.

It was when the patient was in this condition that he was first examined by the writer; and from then on for six months or more he grew worse and worse, suffering agonies of pain, and becoming more and more helpless. Finally, he died from exhaustion. The pathological diagnosis, as determined clinically and confirmed *post-mortem*, will be given in the course of the discussion.

LVI.

Severe Pain on the Posterior Surface of the Left Leg from the Buttock to the Foot; also, Some Pain on the Front Surface of Right Leg and across the Lower Part of the Back.

The patient is an unmarried man of thirty-one, a clerk. He has been of good habits in all respects and has had no serious exposures. He began to have this pain six months ago, without apparent cause, but a short time later he fell on his back, on the ice, and after that he was worse. The pain is at times very severe, especially at night, when it keeps him from sleep. The left foot sometimes feels numb, sometimes burning hot. Micturition is increased in frequency, but there is no loss of bladder control. There is also numbness and pain in the left half of the face along the lower jaw, and especially near the angle of the mouth, on the left side; and under the jaw there is a large, hard mass which nearly fills up the angle of the jaw and neck. This tumor reaches inward in such a way that it makes swallowing difficult, even of liquids.

Examination of the leg reveals a tenderness along the whole course of the sciatic nerve, on deep pressure. The left foot is reddish from capillary congestion, especially toward the inner portion, and is warmer than natural, and tender on deep pressure. There is also some tenderness over the brim of the pelvis, on the right side, in front. Tenderness is also developed by pressure of the finger in the rectum over the inner surface of the ischial bone. No tenderness is developed by deep pressure over the abdomen. The motions of the back are distinctly restricted, the whole vertebral column moving almost as one piece.

LVII.

Pain in the Back and Sciatic Areas.

The patient was an unmarried lady of thirty-five, with no history of neurotic tendencies or nutritional weakness of any serious character. On the contrary, she had had vigorous health, and had worked very hard. As regards family history, one sister had had an extensive tuberculosis of the hip and of the lung, rheumatism had been prevalent in her mother's family, and several of her father's relatives had suffered from deafness. She was a school-teacher, and, besides working in that way, she had taken extra classes of various sorts, and had had a good deal of physical exercise, also in the way of teaching.

In 1901 she went abroad with friends, and stood about to a considerable extent in picture galleries and cathedrals, and was perhaps exposed in this way to dampness. In July she began to suffer from severe pains in the small of the back, called "lumbago" by the local doctor. In a month's time she thought herself to be well again, but after two months more the pain returned, and this time it extended down the back of the left thigh and leg, and even into the left foot. She also suffered from chilblains on her fingers and toes,—a malady to which she had been previously subject. There was no fever, and she struggled against her difficulties for fear of putting her friends to inconvenience. By this time the pain had involved also the right thigh, following, in general, the course of the sciatic nerve. The patient could lie only on her back, and there was tenderness over the lower lumbar vertebræ. For a few days there was some difficulty in passing urine, and a skilful physician considered that she had slight degree of myelitis. Her appetite was poor and her food was not well digested. She had gas in the stomach and bowels, some degree of constipation, and a sense of weight in the abdomen; but she thought little of this, because she frequently had similar symptoms when unable to get

sufficient exercise. Massage and actual cautery failed to relieve the sciatic pain, but after some months of rest in bed the patient improved somewhat and returned home, though under the care of a nurse.

Here a careful examination was made, with the following result: The thoracic and abdominal organs were in good condition. There was still tenderness over the lower lumbar region and at certain points along the course of the sciatic nerve. There was no paralysis or disturbance of sensibility of the skin. The muscles did not show atrophy more than one would expect from disuse. She could lie only on her back, because if she turned to either side the pain was brought on. It was possible to walk slowly for a few minutes but very difficult to go upstairs, although there was no real paralysis anywhere. The knee-jerks were slight. The flexibility of the spine was poor, the back moving all in one piece. She has been treated by rest in bed and hot fomentations to the back; and under this she has slowly but steadily improved in all respects.

LVIII.

Pain about the Waist and in the Back; Great Nervous Excitability.

This patient was a country physician of large practice, who consulted one of the writers for a severe pain in the back and flanks, which he had already had at that time for about four months. When he was examined he was in such a highly nervous state that it was very difficult to estimate the severity of his pain. He had also been taking more or less morphine and other drugs to keep himself going; and, although by their aid he had worked until within a month of the consultation, yet it was at the expense of his nervous strength, so that at the time of the examination he was in a thoroughly hysterical, broken-down condition. The difficulty of estimating the significance of his pain was, more-

over, increased by the fact that for some years past he had been subject to what he had considered as lumbago, coming on in attacks.

This present pain was felt at first at the level of the lower ribs, where it encircled his body like a belt. At times it had been so severe, he said, that he had not been able to sleep or to sit still in any one position. His appetite had been greatly impaired, and he had lost thirty-one pounds in five months. Nevertheless, he did not look greatly exhausted.

He gave the further history that fourteen years before he was thrown from a carriage, and had for two days a partial loss of power and sensibility in his legs. He had also had a good deal of mental worry on account of his financial affairs. Two brothers and a sister had died of tuberculosis.

The physical examination was made with special reference to the condition of the sensibility, and of the flexibility of the spine; but the result of the investigation was not altogether satisfactory, and no positive disturbance of sensibility could be made. He was so excited and nervous that his testimony was not quite reliable.

As regards the flexibility of the spine, it was noticeable that he moved guardedly, but could bend forward fairly well. On the other hand, the sidewise bending was much restricted; and it was less good toward one side than it was toward the other.

He was advised to see an orthopedic surgeon, who advised the use of a plaster jacket; but he, too, found the patient very nervous, and was inclined to attribute at least a portion of his symptoms to that cause and to his habit of taking anodynes for the relief of the pain, though as a matter of fact the actual quantity of morphine taken had not been very large.

The further course of the case will be given in connection with the discussion.

LIX.

Pain, followed by Atrophy and Impairment of Sensibility, in the Areas of Distribution of Both Anterior Crural Nerves.

This patient, a stout, vigorous man of seventy, began to suffer from pain, mainly referred to the anterior surface of his thighs, in February, 1902. Sometimes this pain would spread somewhat beyond the area mentioned and involve the inner side of the right leg, below the knee, or the lateral aspect of the thigh.

The character of the pain varied from an intense sense of "drawing," "as if his nerves were too short," to a severe boring, usually referred to the knee and making the impression of augers being driven with force into the joint. Lying on the back increased the pain, so that for several months he had spent most of the night in his chair. The quadriceps extensor cruris muscles have been growing weak, especially those of the left leg, so that, in fact, he cannot extend the left leg at the knee. The knee-jerks have disappeared. The sensibility of the skin has been diminished over portions of the painful areas, and this change is most marked on the right side, although it is the left leg which is the weaker of the two. There are certain areas, a few inches in diameter, within which the sensibility to the prick of a needle is almost wholly wanting. One such area is just above the knee, another is over the lower part of the skin. No other muscles or nerve-areas are involved except those related to the distribution of the anterior crural nerve.

Neither deep palpation of the abdomen nor digital examination of the rectum reveal any certain indications of disease. The spine is not sensitive to heavy percussion, but is perhaps less flexible than it should be when he bends forward and back. There is a systolic murmur at the apex of the heart, but no irregularity nor considerable enlargement. The urine is normal.

LX.

Tendency to the Occurrence of Severe Hyperæsthesia of the Anterior Surface of Left Thigh, making Locomotion Painful and Difficult.

The patient is a scientific man, sixty-six years old. His symptoms first showed themselves nearly twenty years ago, after an over-exertion in climbing in the Alps,—an exercise to which he was much addicted, and which he had previously practised without harm. During the whole of this long period the symptoms have remained about the same, although at one time, while on a vacation in Switzerland, he improved so much that after a while he could walk half a mile without crutches, and from time to time temporary improvement has occurred, especially when he has been in high places. He generally felt better in the morning, and could then walk fifty rods or so without trouble, although at times even this exertion would precipitate an attack of discomfort and disability of the leg. Ten years ago he adopted the use of crutches so as to go about at pleasure, using only the left leg; and in this way he could walk long distances, and even accomplish some mountain climbing.

His principal discomfort was due to a hyperæsthesia of the skin, which was brought on by those exertions, and this was sometimes so great that the friction of his clothing was unbearable. If his silk bandage, which he wore, slipped from the leg, he would feel himself utterly prostrated from the irritation produced by the contact of his skin with his underwear. This irritability of the skin was mainly confined to the anterior surface of the thigh, and about a year before I saw him an operation had been done, consisting of the section of the cutaneous nerve supplying this area. After this he was much better for a time, but then the trouble returned, and a second operation was done. This also brought some improvement, but he relapsed on leaving the hospital, and attributed this to the fact that he left too soon. In the end

he had a treatment of a somewhat different sort, in which static electricity played a part, and entirely recovered.

The following is an extract from a letter recently received: —

JULY 17, 1902.

If last July a fortune-teller had said, "In one year from now you will be tramping through Alpine snow, eight thousand feet above sea level," I would have replied, "If you know your business, you would get up some more likely story than that." And yet this is what I have just come from doing.

LXI.

Toe-drop of the Right Foot, of rather Sudden Onset.

A student twenty-one years old and in good health had taken a pleasure trip to Jamaica. The morning on which he arrived at the island he noticed that he repeatedly tripped over slight obstacles, with his right foot. This trouble increased for two days, and then for six weeks remained stationary. During this time he was obliged to raise the right foot high in walking, to prevent the toe dragging on the ground. There was no pain and no disturbance in sensibility. The knee-jerks were normal. The electrical irritability of the right tibialis anticus was quantitatively decreased to faradism and increased to galvanism, while the contraction to the latter was somewhat sluggish. Galvanic or faradic stimulation over the right peroneal nerve caused a contraction of the peronei, but not of the tibialis anticus.

There had been no change in the patient's habits except that he had helped scrubbing down the decks of the ship the first few days of the voyage. As this had to be done on his hands and knees, it had made his knees rather sore. There was no history of fever or constitutional symptoms. The patient had never used alcohol or tobacco.

LXII.

Gradual Loss of Power in Both Legs, causing Toe-drop.

The following brief notes give the essential features of an interesting case which I had the opportunity to observe incidentally for a number of years, but never examined in detail professionally.

The patient was a healthy, intelligent woman, who began, when about thirty-five years old, to have a loss of power in the extensors of the right foot and toes, without disturbance of sensibility. After a time the extensors of the left foot also showed the same signs of giving way, and little by little the disorder progressed, until after two or three years it was impossible for her to bend the feet at all at the ankle, and in walking she was obliged to lift the knee very high in order to carry the toes clear of the ground. The hands had not been involved at the end of three years. The general nutrition remained good; and, in fact, no other disorders were complained of except those above noted. The condition of the knee-jerks is not positively known.

LXIII.

Wasting and Weakness of the Extensor Muscles of the Left Thigh.

This patient was a gentleman of fifty, who was referred by his surgeon on account of the above-mentioned condition. On being questioned, he gave the following history: —

About four months previously he had felt a slight soreness on the inner side of the left knee, and this soon grew so much worse that he could not walk without limping. At the end of a week he consulted a physician, who said that he had "water on the knee," and advised free blistering. This seemed to do much good, and he had already improved somewhat when he was thrown out of a sleigh and wrenched the leg a little, which again made his knee worse. After a

time he again improved, so that, although his knee was still weak, there was no soreness unless he walked too far. Use of the knee, however, brought on a lameness which was felt throughout the muscles of the thigh.

On comparison of the two legs it was found that, while the muscles below the knee were nearly equal on the two sides, those above the knee, and especially the extensors, were considerably wasted, so much so that there was a difference of three and a half centimetres between the two thighs, when measured at a point twelve centimetres above the knee. There was no resistance to passive motion, and no sensitiveness over the sciatic nerve. Even the muscles below the left knee were somewhat weaker than the corresponding muscles of the right leg, and the whole left leg felt cooler to the touch than the right.

The faradic irritability of the extensor quadriceps cruris group of muscles of the left leg was moderately diminished as compared with that of the right leg. There was, however, no quantitative difference between the reactions of the two sides.

LXIV.

Spastic Equino-varus, with Impairment of the Sensibility of Foot and Leg; Serious Impairment of Nutrition; High Degree of Nervous Weakness, following Moderate Injury.

The patient was a woman twenty-seven years old, married, hard-working, and of fairly good previous health, though of no considerable education.

In March, 1891, while dismounting from a train, she was thrown down by a sudden motion of the car, and received some slight strains and bruises and a severe fright. In consequence of this she fell into a state of extreme nervousness and debility. Her milk ceased to flow, so that she was no longer able to nurse her child, and she lost weight rapidly, to the amount of perhaps thirty pounds, and became extremely pale. Her right ankle had been somewhat injured,

and was at first bandaged. Gradually a spasmodic condition of the muscles developed, so that the foot was held permanently in a position of extreme equino-varus, and became blue and swollen from interference with the circulation, perhaps complicated by vaso-motor disorders. Occasionally, the spasm increased, and became painful. Although the foot could not be voluntarily replaced, it was evident on careful examination that the muscles antagonistic to those in spasm were not really paralyzed. It was also found that the hamstring muscles of the same leg and all the muscles about the hip joint were in contraction. Handling the foot and leg gave rise to pain, but tests showed a marked diminution of the sense of contact, and of pain (as tested by pricking with a pin); and this was true not only of the foot and leg, but of the whole right half of the body and face. It was noticed that flies were allowed to crawl over the affected foot and leg as if their presence was not recognized, while they were at once brushed off if they alighted on the other side. The field of vision of the right eye was somewhat diminished in size for motion and for white test-objects, and the acuity of vision of the right eye was also found to be less than of the left. The hearing of the right ear was slightly less than that of the left.

The case was one where suit for damages had been brought; but the conditions described persisted for many years after the case was settled, and in fact have continued in some degree up to the present time (1900).

LXV.

Double Vision, Neuralgic Pains in Legs, Numbness of Hands, Impairment of Speech.

An acrobat, thirty-eight years old, had been travelling with a circus for ten years, during which time he constantly used alcohol to excess. He contracted syphilis when he was thirty, but when the secondary symptoms appeared he

began treatment, which he continued several months, and since then has not been troubled in that way. He has been married several years, but has no children.

Five months ago, while going through his usual high trapeze performance, he had a sudden attack of double vision come over him just as he launched himself into the air to catch a trapeze swinging toward him. Unfortunately, he grasped at the wrong image, and fell forty feet, landing, by good chance, in the net.

He suffered no injury from the fall; but about one week ago he began to have "excruciating pains" in both legs, which he likened to hot needles being thrust quickly in and out.

He has kept at his work up to the present time, though he was obliged to give up high performances on account of his diplopia, which seems to be due to a left internal strabismus. The urine is normal, and the bladder functions undisturbed. The sexual desire has been increased for the past few weeks. Examination shows paresis of the external rectus of the left eye. The pupils are regular, and the right reacts normally, while the left responds only slightly to light; but reaction with accommodation is normal. The right knee-jerk is normal, but the left is exaggerated. The gait is unaffected. The above record carries the history to the time of the first examination.

The patient was next seen four years later. He says he does not feel as strong as formerly. He has been much troubled by shooting pains in his back and legs, recurring by spells. Double vision, when looking toward the left, has been persistent. There has been a sense of numbness in the fingers of both hands for a year or more.

The urine escapes involuntarily once in a while, and there is complete loss of sexual power. Physical examination of the eyes shows the same condition as formerly; but the right knee-jerk is absent, while the left still remains exaggerated. There is now a well-marked coarse tremor of the lips and

tongue, and the patient notices an impediment in his speech, which at times is apparent also to others.

LXVI.

Deep-seated, Distressing Pain in the Left Flank, increased by Motion; Depression and Debility.

This patient was a married man of forty-four, Hebrew by race, and an anxious, nervous man by temperament. He was a picture of misery when he was first examined, which was in the summer of 1897. He had then thought it necessary to confine himself to the house and often to bed, because of the pain and distressing sensations above noted, though in fact there was no reason that he should not have gone out, and with a little urging, he did so. He complained that he felt weak and miserable, and suffered from a sensation as of a heavy ball rolling to and fro within the left half of the abdomen and through to the back whenever he attempted to walk. On further inquiry, he said he had had sharp thrusts of pain, which would run down the arms into the fingers. He did not have them in the legs, but the legs used to get "numb," so that it was with an effort that he used them. He also said it was with some difficulty that he kept himself from stumbling when in the dark, and he thought that his micturition was a little delayed. It appeared that he had had gonorrhœa twice, though as a very young man. He had never had a "sore" to his knowledge; but in the summer of 1892 large ulcerations appeared on the legs, and the scars of these still remained in the form of large, brownish, depressed spots. They healed very slowly, he said, and he thought his strength had never been so good since then. At the time that this pain in the abdomen first came on he went to Rangeley Lakes; but the weather was poor, and he came home in a miserable condition. He said he had become impotent, and felt generally hopeless.

On examination he was found to sway somewhat when his

eyes were closed, but with an effort this tendency was overcome. The right pupil was larger than the left, but in the centre of the left cornea there was a scar which he had had since boyhood. The right pupil reacted normally to light, the left very slightly. The knee-jerks were rather lively.

This patient remained under observation for many years. At times he could be induced to go out, and to engage actively in business, but occasionally he would fall into a condition of despondency over his symptoms, and would then lie in bed for a few days. The sensation of a heavy weight in the left flank remained constant. So long as he stood still, he was not troubled; but the moment he began to walk it depressed him terribly. The legs felt stiff, and, as he said, "numb," though there was no actual loss of sensibility. The shooting pains in the arm returned from time to time, but it was difficult to make out what they signified. At one time he was examined by an eminent neurologist, and pronounced to have tabes in an incipient form.

Treatments of every kind were thoroughly carried out,—counter-irritation, electricity in every form, baths of various sorts, then lumbar puncture; but nothing brought permanent relief. His present condition is not materially different from what it was five years ago.

LXVII.

Severe Fits of Coughing and Choking, Attacks of Vomiting, Pains of Intense Severity, and Other Symptoms.

A laborer, forty-three years of age, had been subject for two months to paroxysms of coughing which were so severe that he would turn blue all over; and sometimes his wife would really think he was dying. Each attack lasted three or four minutes, and he had at least one every day. There was no actual pain associated with these spells. At times he raised a small quantity of thick mucus.

At about the time that this trouble began he had noticed

a slight drooping of his right eyelid, and this had grown progressively worse. There had also been more or less pain in the back, varying in character from a dull ache to sharp shooting twinges. He had had one or two attacks of "indigestion" during the same period, associated with abdominal pain and vomiting. The bowels moved pretty regularly; occasionally, however, when he felt an inclination to have a movement, he would find this impossible, but would break out in a cold sweat from a severe pain in the rectum, which would last ten or fifteen minutes. There was no disorder of micturition, except some delay in starting the urine.

Numbness of the fingers of the right hand and of the great toe of the right foot had also been a source of some annoyance. During the two weeks previous to the time he was first seen the patient had been unable to work, both on account of the pains and because of feeling generally played out.

The physical examination showed ptosis, and paresis of the superior, inferior, and internal rectus of the right eye. The right pupil was slightly larger than the left, but both reacted normally to light. There was hoarseness of the voice, and moderate exertion caused difficulty and noisy inspiration, suggesting laryngeal obstruction. By the laryngoscope it was seen that both vocal cords lay in the median line, the right being capable of only slight motion, while the left was wholly paralyzed. There was diminished sensibility to touch and pin-prick over the terminal phalanges of the right hand and foot. The knee-jerks were absent. The patient had contracted gonorrhœa twelve years previously, and had used alcohol to excess until three years before the present illness. There was no positive evidence of his having had syphilis.

LXVIII.

Paroxysmal Attacks of Epigastric Pain.

A man forty-five years old had been subject, for three weeks, to paroxysms of severe pain in the epigastrium, which would come on suddenly in the morning and last four or five hours. These attacks were associated with vomiting. The patient says that at first they came almost regularly every other morning. He had never had any stomach trouble before, and can eat any kind of food between the paroxysms without distress.

When seen during an attack, the patient was walking about the room pressing both hands over the epigastrium, and the tears were rolling down his cheeks. There was no local tenderness, but, on the contrary, firm pressure seemed to give him some relief. The pupils were equal, and reacted normally to light and with accommodation. The tongue was clean. The heart and lungs were negative. The liver and spleen seemed normal in size. Palpation and percussion of the abdomen showed nothing abnormal. The patellar and plantar reflexes were normal.

During the second and third weeks these paroxysms of pain returned at irregular intervals, sometimes recurring two or three days in succession, sometimes at intervals of two or three days. They always came on in the early morning, and were accompanied by retching and vomiting of bile. They were not associated with any rise in temperature. Morphia was required for relief, and when on two occasions subcutaneous injections of water were substituted, they were without effect.

Examination of the gastric contents between the attacks showed nothing abnormal, and the inflated stomach was found to be normal in size and position.

Repeated and careful searches for plasmodia in the blood were unsuccessful.

Examination of the urine showed neither albumen, sugar,

nor lead to be present. In spite of the fact that no plasmodia were found in the blood, large doses of quinine were given, and this treatment was followed by a cessation of the attacks for several weeks. Later reports from the patient, however, stated that the pain had returned as before, and was unaffected by quinine.

This patient had had no infectious disease since childhood, except gonorrhœa, which he contracted fifteen years ago. He had been in the habit of using alcohol to excess in his daily life, though but rarely to the extent of intoxication.

LXIX.

Atrophy and Pain in Hands and Arms; Very Slow Progression; Death from Intercurrent Disease.

On Dec. 28, 1897, I was consulted by a lady of twenty-seven, a person of intelligence and courage, on account of loss of power of right hand, especially in the index and middle fingers and the thumb, and of pain in the hand and arm. This loss of power had been noticed for a year and a half, the pain for a somewhat less time. The pain seemed to centre at a spot on the back of the forearm toward the lower end, and spread thence through the whole hand. It was of "scalding character." She had also noticed that her power of distinguishing heat from cold had greatly diminished, as regards the right hand.

On examination, atrophy of the thenar muscles of the right hand was found, and the fingers were twitched frequently by slight muscular contractions, rather more extensive than those usually described as "fibrillary twitching." There was almost complete loss of the sense of pain to the prick of a pin, as well as to changes of temperature, over the hand and lower part of the forearm, especially on the extensor surface. The sense of touch was almost perfect over these same areas. Both knee-jerks were markedly increased. A soft systolic murmur was heard at the apex of the heart.

As the disease progressed, the weakness, atrophy, and fibrillary twitching involved the left hand and arm and the muscles of the shoulder and upper part of the back. The impairment of sensibility also spread, and finally involved the back of the head and parts of the face. After about a year she developed a malignant endocarditis, characterized by persistent fever and hemorrhages in the retinæ and the skin; and after another year of illness she died. No autopsy was allowed.

LXX.

Staggering Gait, Nystagmus, Hesitating Speech, Clubbed Foot.

This patient was a boy, eleven years old, with a good family history, none of the relatives having suffered from any serious disease. At the age of six he fell downstairs, striking his occiput and receiving a wound which left a scar about the size of a quarter of a dollar. There were no serious symptoms immediately, but almost a month later his mother noticed that he staggered in his walking. This symptom grew progressively worse, so that for two years previous to his visit to Boston he had experienced considerable difficulty in getting about and not infrequently fell down, sometimes bruising himself severely. In fact, he was liable to fall whenever he tried to stand still without support. During the past few months his mother had noticed a peculiar hesitation in his speech. The bowels were constipated, but there was no disturbance of the bladder function.

Physical examination showed a well-developed and well-nourished boy. The pupils were equal and reacted normally, but the eyes made coarse jerky movements when he looked to the extreme right or left. There was also a coarse irregular tremor of the head when the attention was fixed. The movements of the arms showed marked inco-ordination; and, when the patient tried to grasp an object, the hand would approach it in a hovering manner, and then suddenly pounce upon it. The speech was interrupted and jerky. The gait

was very unsteady, and suggested marked tabetic ataxia combined with the reeling seen in cerebellar inco-ordination. There was no objective nor subjective disturbance of sensibility. The spine was straight. The knee-jerks were absent, but the plantar reflexes present. A peculiar deformity of both feet was present, suggesting clubbed foot.

LXXI.

Recurrent Attacks of Vomiting.

This patient is a married man, of forty-one, who came into the hospital April 5, 1902. By occupation he is a driver for Jordan & Marsh. His complaint is of attacks of vomiting, protracted and recurrent, which come on without apparent cause, unless it be nervous fatigue or some slight error in diet.

The first of these attacks occurred a year ago, and was preceded by a series of sharp, darting pains in various parts of the trunk. In character these pains were like those from pricking with a needle. In the following month another attack occurred, which lasted five weeks, this time unattended by pain. For the first two weeks he vomited every ten or fifteen minutes, and his weight was reduced eighty pounds. Since then he has had two or three similar atacks, the last having occurred two days before his entrance to the hospital. It was ushered in by nausea, and began shortly after dinner, continuing through the day and night.

The physical examination showed the patient to be a well-developed, muscular man. The pupils were equal, and reacted to light and with accommodation. The bodily temperature was normal. Examination of the heart showed a soft systolic murmur at the apex, with some accentuation of the second aortic. The heart was but little, if at all, enlarged. The abdominal organs were normal. The knee-jerks were lively, the skin reflexes all normal. The urine and blood were normal in character; and the stomach con-

tents, as obtained by the tube, were also normal. During the insertion of the tube the patient vomited a clear, thin, greenish mucoid material, which was similar to that previously vomited.

There was no recurrence of the attacks while he was in the hospital, and he was soon discharged well. Two weeks later, however, he was readmitted with the same symptoms, but these again yielded completely to the influence of rest and hospital care.

As regards the personal history, the patient had had syphilis five years ago, but had shown no secondary symptoms. He is a man of nervous temperament, and is easily startled and sometimes weeps on slight provocation. He worked on an electric car at one time and had many nervous strains; and, when these attacks began, he was superintendent of a large number of men in a stable. His personal habits are good, except that he smokes a good deal late at night and has been in the habit of taking six cups of tea daily.

His mother is said to have had "stomach trouble," and to have been of a nervous temperament.

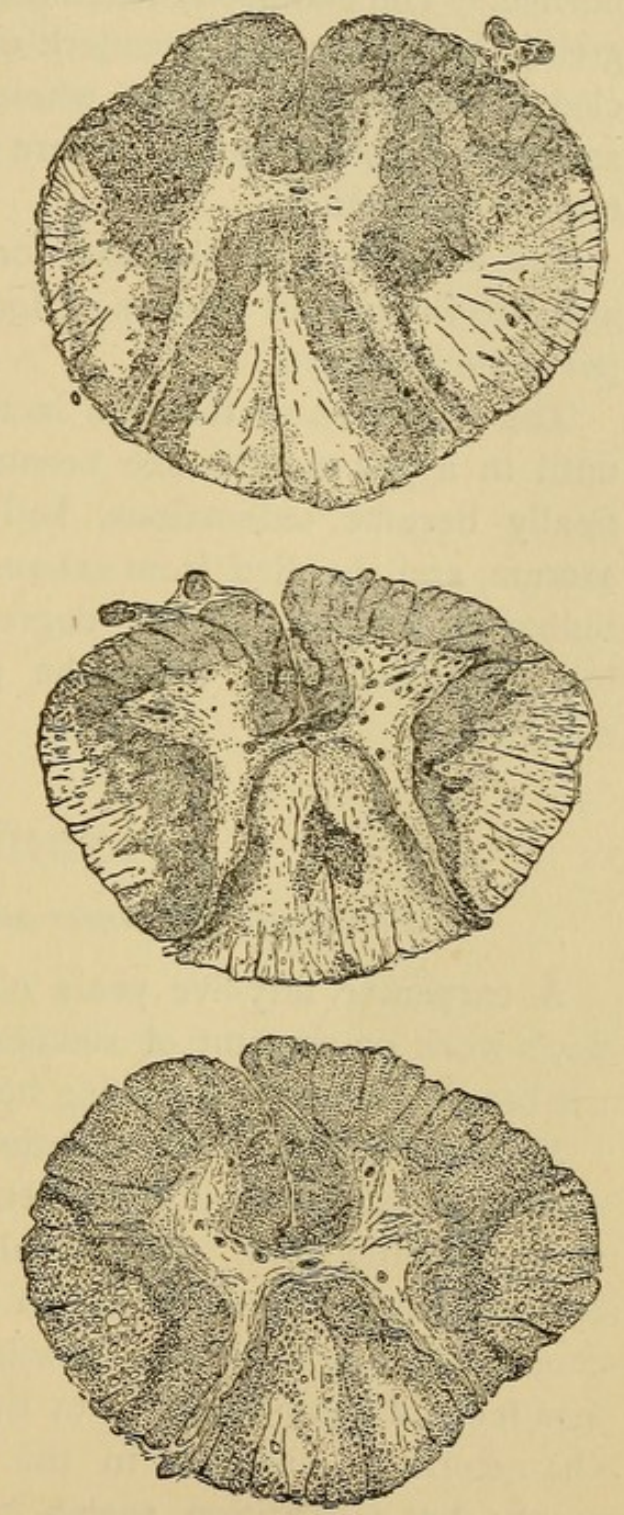
LXXII.

This case is that of a woman fifty-eight years of age, but appearing much older. Her mother had a tremor (probably senile) for some years before her death, and her grandfather is said to have become paralyzed somewhat after the manner of the patient herself.

She had had a troubled life, and may have contracted syphilis from a dissolute husband, though the only sign of it was a temporary loss of hair when she was twenty-seven years old.

For six years she had suffered from exhausting and long-continued attacks of diarrhœa, which followed her to the last. Three years before her death her skin began to darken, first in the normally pigmented areas and finally all

over, so that her areolæ became almost black, while the rest of the skin varied from a light brown to a dark chocolate, except that her face and lips were pale, her diarrhœa having reduced her strength and made her excessively anæmic. The face was covered with epidermal scales and exudation. In temperament she was irritable, eccentric, and wanting in self-control, and showed an indifference and unreasonableness, mixed with cunning, which, together with the fact that five months before her death she had, after great exhaustion, a group of attacks which seem to have been epileptiform in character, suggested cerebral degeneration.



Case LXXII.

Three years before her death she began to have paræsthesia of the fingers, associated, after a time, with slight inco-ordination. This condition gradually increased, but did not, for a long time at any rate, involve the legs. Six months before her death her gait became rapidly and even suddenly feeble and ataxic, while the inco-ordination of the hands also increased, both symptoms being exaggerated by closure of the eyes.

She had no lancinating pains at any time.

At the time of the examination the pupils were found normal. The cutaneous sensibility of the arms and legs was greatly impaired; the knee-jerk was exaggerated, and ankle-clonus was present. The whole body was greatly emaciated and the muscles everywhere wasted, but not one group more than another.

She exhibited, as she had for a long time, a ravenous appetite for certain articles of food, especially coffee, and a perversion of taste.

The weakness of the legs increased slowly, but steadily, until in a few months she became paraplegic. The limbs finally became œdematous, bed sores developed on the sacrum, and she died from exhaustion without having shown bulbar symptoms. Some degree of sensibility to pricking remained, even when the paraplegia was practically complete.

LXXIII.

Paraplegic Weakness and Inco-ordination.

A carpenter, fifty-five years old, and who had not lost a day's work on account of sickness for thirty years, came to the hospital with the following history: —

He complained that six months previously he had noticed a sense of numbness in both feet, and that the legs began to feel constantly tired. This numbness had extended, so that by two months ago it was up to the knees, and there was a constant feeling as of ants crawling over his legs. Now, his legs feel cold and numb up to the hips. He has almost no characteristic sensation in the rectum when the bowels move; but micturition seems normal, except that in very cold weather there is some involuntary dribbling of urine. There has been a distressing feeling about his waist for the past three weeks, as if he were wearing a belt that was too tight for him, and the onset of this was accompanied by a

dull, aching pain in the lumbar region, which has persisted ever since. He has been unsteady on his feet for three months past, and feels as if he were "walking on clouds." He cannot tell when he steps on a stone or another person's foot, and walking in a dark room is very difficult. There have been no stabbing pains. The sexual appetite, which was formerly strong, has now been absent for six months. The bowels are very constipated.

Physical examination shows a well-developed man, of good color. The pupils are equal, and react normally. The arms show no disturbance of sensation or motion. The spine is straight and flexible. There is diminished sensation below the knees of both legs, not limited sharply to the areas corresponding to special nerves or nerve-roots. There is no muscular atrophy nor weakness. The knee-jerks and plantar reflexes are lively, and the Babinski phenomenon is present on the left side. The gait is markedly ataxic, and Romberg's sign is present. The blood shows 70 per cent. Hgb.

He said, on inquiry, that he had had a chancre seven months before, but had not been troubled by any secondary symptoms, and that he had been treated thoroughly, as he supposed, for five months after the primary sore appeared.

LXXIV.

Paræsthesia of Legs, Inco-ordination, Chronic Diarrhœa, Glycosuria.

The patient is a lady of forty-two who has had diarrhœa much of the time for two years, together with a considerable degree of impairment of control of the rectal sphincters. Sometimes she has as many as forty movements a day, and occasionally they are offensive. The movements sometimes contain portions of intestinal casts. There is also a slight and intermittent impairment of control of the vesical sphincter. There was no sign of loss of control until the

diarrhœa began. For a period of nearly two years she has been troubled with an increasing numbness of the feet and legs, which spread gradually, first to the knees, then over the thighs. With this numbness, inco-ordination of motion came on, which now is of a high degree. The legs are sometimes the seat of severe pains, seeming to be in the bones, and occasionally of sharp, lancinating pains, lasting only a second or two. There is no numbness of the hands or inco-ordination of motion of the arms. The eyesight is poor, and occasionally she has a pain over one or the other side of the forehead, especially on the left side. These are apt to occur daily for about two weeks, though without well-marked periodicity. At such times the eyeball is generally congested, and this appearance remains for some little time. She has also hallucinations of sight, so that "she sees things around the room; and, when she goes to them, they are not there." At one time the feet were very dry and cracked. Last summer she lost about twenty-three pounds, but now she is gaining. Her color is pale, but not cachectic; and examination of the blood gives a low Hgb., but only slight diminution in red corpuscles.

The urine showed the presence of sugar.

Physical examination shows normal condition of the pupils and eye muscles, good use of the arms and hands, normal cardiac conditions, normal abdominal organs, so far as can be determined by palpation. There is well-marked Romberg symptom; and the knee-jerks are absent, but hypotoncity is not discoverable.

There is a diffuse impairment of the sense of contact over the legs, but only of slight degree; and also marked impairment of the sense of position. There is no well-defined loss of the pain sense.

At the first and several subsequent examinations, glycosuria of considerable amount was discovered.

Under treatment this patient improved very much, though she did not entirely recover.

LXXV.

Paræsthesia of all Four Extremities. Increased Reflexes. Muscular Atrophy of Hands and Arms.

An unmarried lady of sixty consulted one of the writers for numbness, prickling, and "heaviness" of hands, arms, and legs, which had troubled her for nearly a year, and for dull feeling in the head which she had had for a much longer time. Her gait was uncertain, and had been growing worse. The prickling in the hands and arms had at one period disappeared, and then recurred. She had had some pretty sharp "rheumatic" pains in the hollow of the right foot and in the right leg; and there had been some twitching of the muscles of the right hand and those of the back, and "cramps" of the arms and legs when placed in awkward positions. In walking, she felt as if a rope was tied around the leg above the knee. Her general health was fair, but her color had been pale for the last year or two.

On examination it was found that she walked with a spastic gait. The Romberg sign was present, the knee-jerks and wrist-jerks highly exaggerated, and ankle-clonus present. Motions with the hands were good, except that the strength was very deficient. The muscles over the whole body were small and feeble, and the muscles of the hands and arms were positively atrophied. There was fibrillary twitching to be seen over the feet, hands, and arms.

LXXVI.

Recurrent Paræsthesia of Both Hands, associated with Pain.

This patient is a woman, thirty-five years old, who has "worked out" by the day for several years, her chief duties being scrubbing floors and washing windows, which keeps her hands constantly immersed in hot or cold water. During the past month she has been troubled with a sense of numbness and tingling in both hands and all her fingers.

She is able to do her work, however, and tries not to notice it. In addition to this she is awakened every morning at three or four o'clock by a dull pain, which radiates from the front and back of her hands up to the elbows. This pain is somewhat relieved if she lets her arms hang down over the side of the bed, and after a while she is able to sleep again.

She never has the pain during the day-time; but the numbness is continual, though it is worse at night, so that at times she is waked up by it, especially toward morning. She has had no infections disease since her childhood, and does not use alcohol at all. The bowels are somewhat constipated. Her color is good. The pupils are equal, and react normally. The knee-jerks are normal.

The hands show no disturbance of motion and no impairment of sensibility. The tension of the radial arteries is normal. The patient says that she had a similar attack of numbness of the hands several months ago.

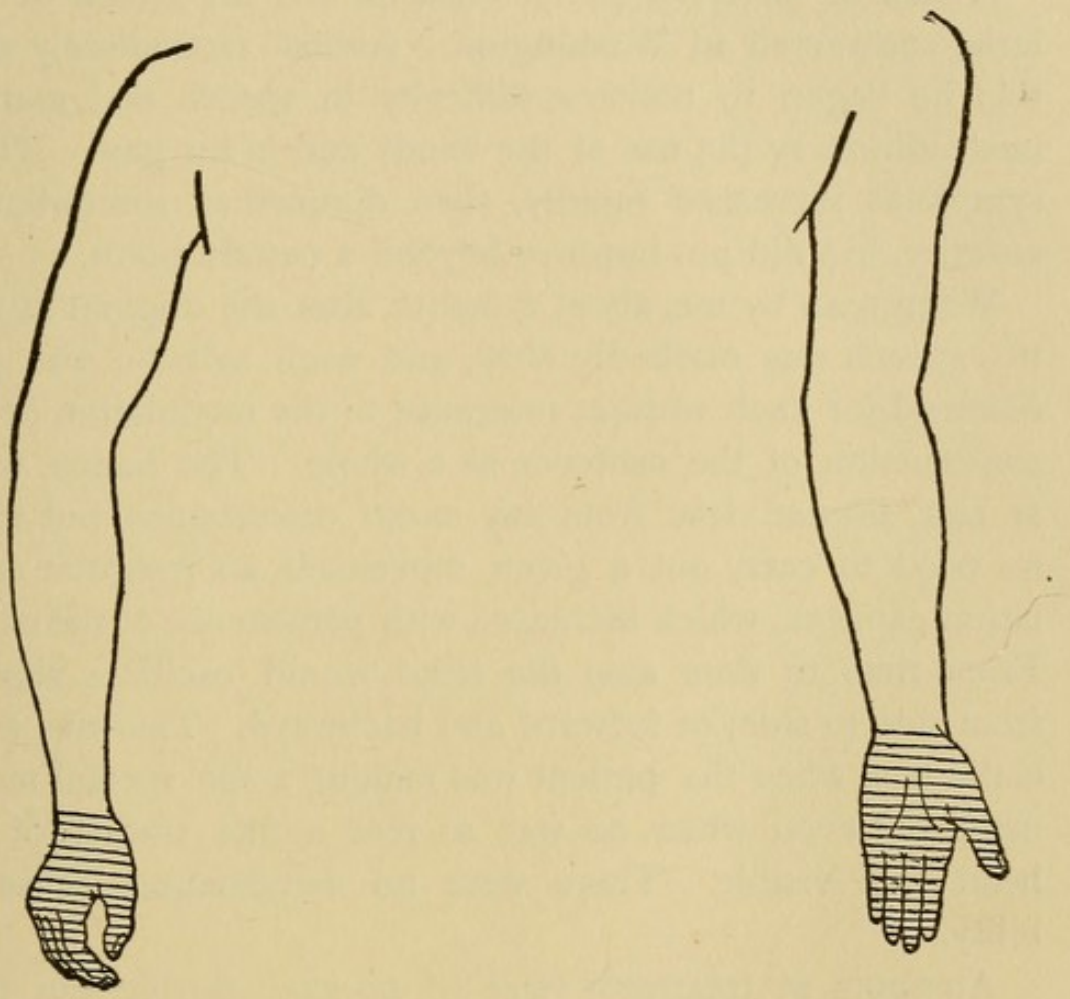
LXXVII.

Tremor of Arm and Head, associated with Anæsthesia of Hand.

A bright, active-looking girl, twelve years old, was sent home from school one morning on account of a violent trembling or shaking of her right arm, which came on her suddenly, and which she was unable to control. This lasted during the entire day, but ceased when she went to bed. The same tremor returned three times during the following two months, excited once by continued writing and once by a sudden fright.

On the day of her first examination at the hospital there was no tremor of the arm, but occasional choreiform twitchings were present in both arms and shoulders. There was also a constant coarse rotary tremor of the head. The muscular power of the hands was not diminished, but there was complete anæsthesia and analgesia of the right hand over the area indicated by the diagram. A pin could be thrust

deeply into the skin over this area without exciting any sensation whatever. The knee-jerks were equal and exaggerated. Ankle-clonus was absent. A soft (functional) systolic murmur was heard over the pulmonic area of the heart.



CASE LXXVII.
Showing Area of Anæsthesia.

After a certain kind of electrical treatment, lasting a few minutes, the tremor of the head ceased, and sensation in the right hand was found to be normal. The patient returned for treatment several times, and on each occasion the anæsthesia and analgesia were found as in the diagram. Each time, however, they passed off during the application of electricity.

LXXVIII.

Inco-ordination of Limbs and of Speech Muscles following Malaria.

A man of thirty, of perfect health, had an attack of malaria, contracted in Washington. Almost immediately after this he began to notice a difficulty in speech and marked unsteadiness in the use of the hands and in his gait. These symptoms increased rapidly, then diminished somewhat in severity, but did not improve beyond a certain point.

When seen by me, about a month after the original attack, his speech was markedly slow, and each syllable was pronounced for itself without reference to the modulation or the construction of the sentence as a whole. The hands, when at rest, seemed free from any motor disturbance, but when he tried to carry out a given movement an irregular oscillation came on, which increased with persistence of the effort. From time to time also the head would oscillate slightly from side to side, or forward and backward. This was especially true when the patient was making some special movement, but even when he was at rest a fine tremor of the head was visible. There were no disturbances of sensibility.

Attempts at treatment were of no avail during the time that the patient remained under my observation.

LXXIX.

Spastic Paralysis and Ataxia, of Gradual Onset; with Bulbar Symptoms.

A young woman of nineteen consulted me, in November, 1891, mainly for difficulty in the use of the arms and legs, and gave the following history: —

Fourteen months previously she had begun to have lameness and numbness of the right leg. These symptoms soon passed away, but again showed themselves a few months

later, associated with numbness of the right hand, and with inco-ordination, or, rather, uncertainty, of motion. In the course of two months she again improved, but a little later the symptoms returned as before, though continuing to vary in amount. The muscles of the face became slightly numb and paralytic, and the articulation indistinct; but at this time the signs were confined to the left side. At times, during this period, double vision came on, and then passed away; and for about a week she suffered from dizziness. During April she had difficulty in swallowing for about a week. My examination showed the presence of static and loco-motive ataxia of both arms and legs. At the same time both knee-jerks were increased, and ankle-clonus was present. There was impairment of sensibility, of moderate degree, as regards position, temperature, touch, and pricking, over the feet. The left leg and foot were in all respects more affected than the right. The conditions still seemed to vary considerably between different examinations; but in general she grew worse, so that before long it was impossible for her to walk alone, partly from spastic and paralytic troubles, partly from inco-ordination. The articulatory defect, however, did not increase, perhaps even diminished. While in this condition, wholly unable to walk alone under ordinary circumstances, she had an attack of somnambulism to which she was subject, and in that state she walked across the room. Subsequently, under the influence of a semi-hypnotic treatment, her power of walking improved to some extent, so that she was able to get about the room by the aid of chairs. Eventually, however, she grew worse, and died from an intercurrent infectious disease, somewhat more than three years after the onset of the symptoms.

The examination of the central nervous system, as made by Dr. Taylor, will be reported on during the discussion of the case.

LXXX.

Weakness and Inco-ordination of Limbs, of Acute Onset; Severe Anæmia.

This patient was an elderly lady, of seventy, who at the time of the first examination was confined to bed with great weakness and inco-ordination of the limbs, associated with a sense of numbness of the hands and feet. She looked pale and poorly nourished; but this had been present for a long time, and the examination of the blood had indicated only a moderate, secondary anæmia.

On inquiry it was learned that about three months previously she had had an attack of sore throat, called tonsillitis, though there were white spots on the tonsils at first, which disappeared in the course of a few days. She was said not to have been very sick; but the temperature on the first day was 103, after which it gradually decreased. There had been some difficulty in swallowing, but it was reported that the cervical glands were not swollen. She seemed to be in the way of recovering from this attack, but, after she had been fairly well for a week the difficulty in swallowing returned. This difficulty soon began to pass away, however, and disappeared in the course of three weeks. One week later she had pain in the right side, followed by slight jaundice; and at the end of another week paræsthesia of the hands and feet began to come on, attended by inco-ordination as above noted, and this soon became so severe that she could not walk alone.

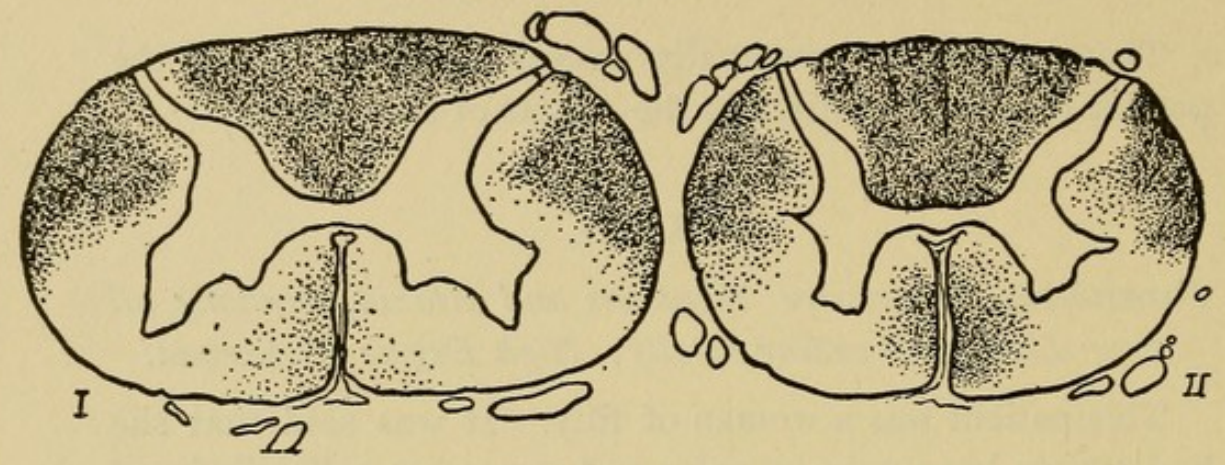
At the examination, all motions were possible, but the strength was very feeble and the movements were very awkward. The sensibility of the skin was greatly diminished in all its modes over both the hands and the feet, especially the latter. The sense of position was very poor,—in fact, almost lost, so far as the fingers and toes were concerned. The knee-jerks were absent on both sides. The pupillary reactions were normal. The sphincters were unaffected.

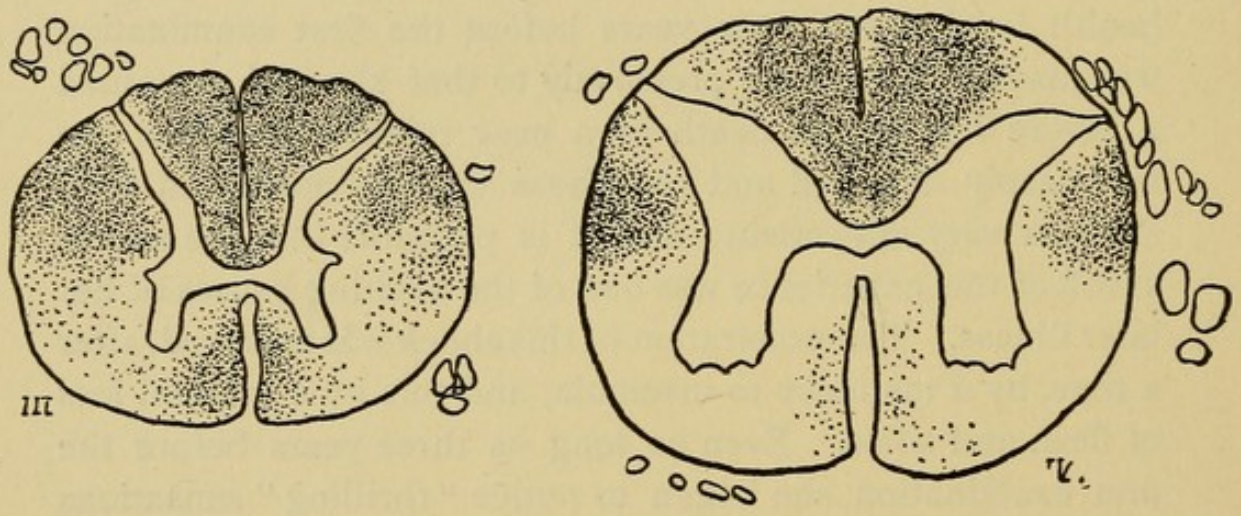
These symptoms eventually passed slowly away, and the patient recovered entirely in the course of six months.

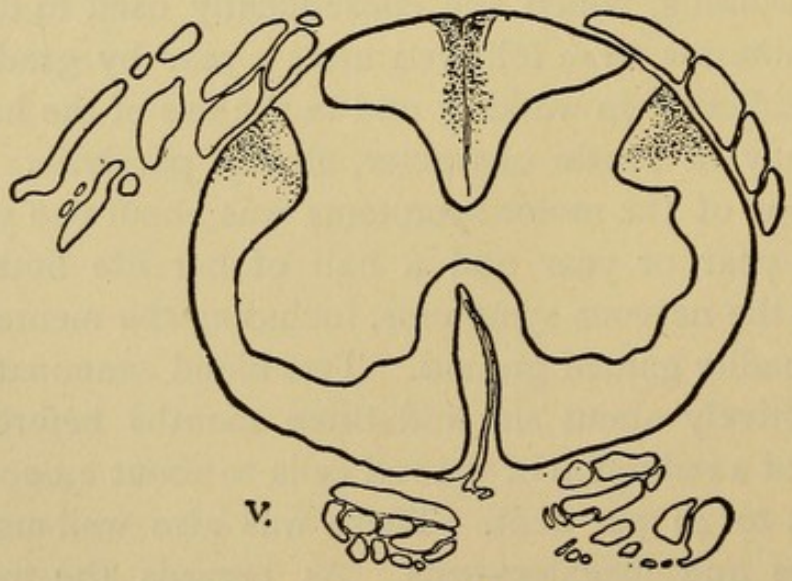
LXXXI.

Paræsthesia, Progressive Weakness and Ataxia, involving all Four Limbs and ending fatally; High Degree of Anæmia.

This patient was a woman of fifty. It was said that she had always been pale in color and somewhat self-willed and excitable in disposition, though otherwise in fairly good health until about four years before the first examination was made. Two years previously to that she had sustained a severe loss in the death of a near relative, to whom she was deeply attached and on whose companionship, in fact, she was very dependent; and it is probable that the severe shock of this experience was one of the exciting causes of her later illness. The prostration of this shock was followed, after a time, by a tendency to insomnia, and this by a gradual loss of flesh and color. Even as long as three years before the first examination she began to notice "thrilling" sensations in the ends of the fingers when struck together, and also "drawn" feelings in the hips and knees, and across the abdomen, on going upstairs. This last feeling was increased by walking, which she consequently used to dread. These paræsthesias were followed after a year by gradually increasing difficulty in walking and in the use of the hands, at first mainly of ataxic character, finally paralytic. The whole duration of the motor symptoms was about two years. In the last year or year and a half of her life both the anæmia and the nervous symptoms, including the mental excitability, steadily gained ground. Two blood examinations, made respectively about six and three months before her death, showed a reduction of the red cells to about 2,000,000, and the Hb. to 40 per cent. There was also well-marked poikilocytosis and megalocytosis. As regards the mental condition, it may be said that at quite an early period in her







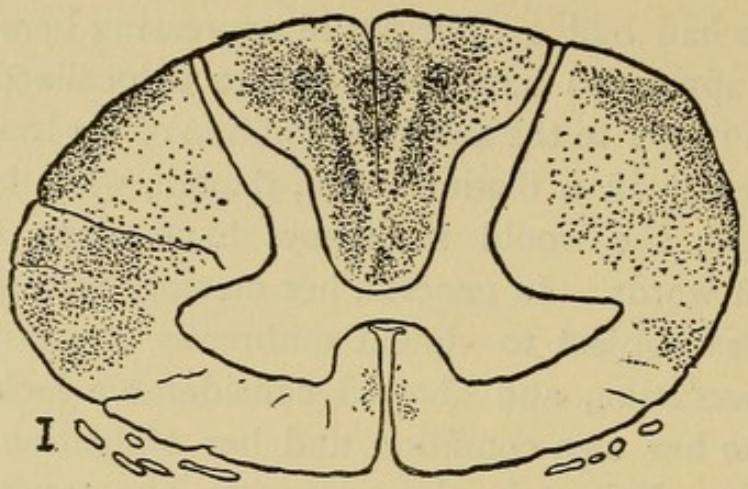
CASE LXXXI.

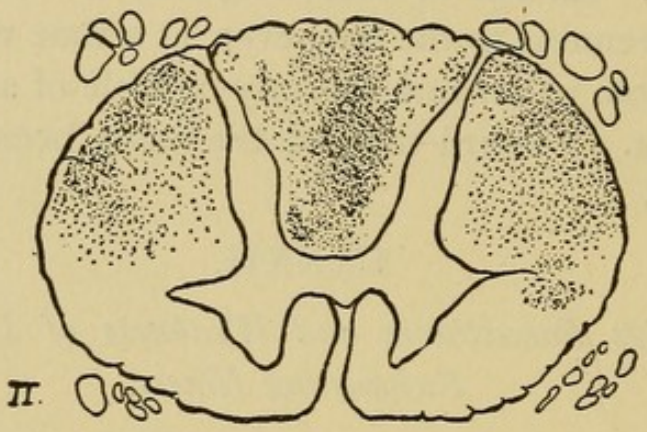
illness she had had a difficulty in expressing herself, which does not appear to have been due to a localized cerebral lesion, but rather to the anæmic condition of the brain. This did not return in a distinct form, though, when fatigued or embarrassed, she would sometimes have slight trouble in finding her words. In general, her memory remained good; but she was subject to violent outbreaks of passion under slight provocation, and showed considerable lack of judgment as to her own condition and her obligations to those around her. Except in these respects, she retained a high degree of keenness to the last, even at a time when she was bloodless from pallor and scarcely capable of a movement of hand or foot. Toward the end the limbs became extremely œdematous.

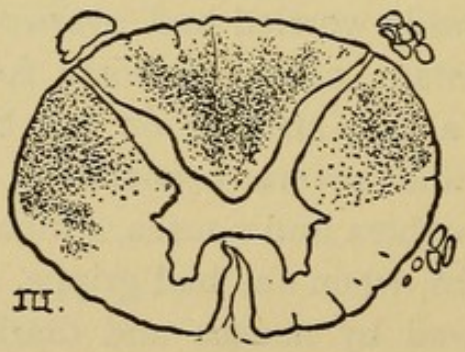
LXXXII.

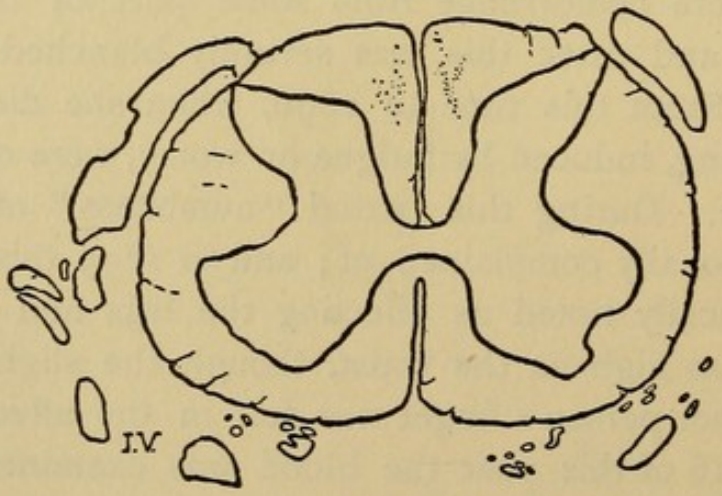
Progressive Paræsthesia and Weakness of Limbs; with Exhausting Illness.

This patient, who was a lady of fifty-two, had always been anæmic, easily worried and overworked, and had had a real and constant cause of worry for many years. In 1882 she had a fall, striking on her back, and in 1883 a long-continued and severe bronchitis. In 1890 she had considerable diarrhœa and nausea, which continued off and on for six months, when she had grippe, and this in its turn was again followed by nausea and diarrhœa. In 1892 she had a severe hemorrhage from some part of the urinary passages, and after this was severely blanched for many months. From this time to 1896, when she died, nausea and vomiting, induced by fatigue or worry, were of frequent occurrence. During this period "numbness" of the arm was occasionally complained of; and in 1895 this symptom was specifically noted as affecting the legs and sometimes extending as high as the waist, though the slightest touch from another person's finger was felt in the affected parts. On April 16 of this year the blood was examined for per-









CASE LXXXII.

nicious anæmia, but with negative results. Tremor in the left and then in the right arm was next noted. The pupils were found to have a normal reaction. She died finally on June 8, 1896, from exhaustion, due mainly to the continued attacks of vomiting.

LXXXIII.

Paroxysms of Abdominal Pain; Paralysis and Atrophy of Certain Groups of Muscles of Arms and Legs.

A mason, thirty-six years old and of good habits, had been subject to attacks of abdominal pain for five weeks. These attacks would last several days, and he would roll about the bed and cry out, so great was the severity of the pain. There was vomiting with some of the attacks, and the bowels were constipated. Pressure over the abdomen relieved the pain somewhat.

About two weeks before the time when he was first seen, he was seized with a chill, followed by fever and sweating, and this attack was followed two days later by another of similar sort. A few days after these paroxysms first appeared he began to lose strength in his arms; and this weakness has increased ever since, so that during the past week he has been unable to dress himself. At about the time the trouble with his arms began he had more or less dull aching pain in both legs, followed in a few days by weakness of such a degree that walking became so difficult that on one occasion he fell in the street and was unable to get up alone.

Examination showed moderate pallor of the skin and mucous membranes. There was almost complete loss of power, and some atrophy, of all the muscles of both arms, from the shoulder down, except the supinator longus and the long flexors of the hand. The atrophy was most marked over the extensor surfaces. Both legs showed marked loss of strength of the extensor muscles. There was no impairment of sensibility to be made out, and no disturbance of micturition. The knee-jerks, and also superficial reflexes,

were diminished. There was no elevation of temperature. The blood examination showed Hgb. 45 per cent., reds, 4,240,000 and whites, 8,000, while many red corpuscles contained Grawitz granules. Plasmodia of tertian malaria were present. The urine contained a trace of albumen, and the sp. gr. was 1029. The sediment showed numerous hyaline and finely granular casts and renal cells, and many uric acid crystals.

Upon investigation it was found that the patient's wife and son had been subject to attacks of severe abdominal "cramps" and obstinate constipation, while a seven-year-old girl had suffered from similar "cramps" and had recently had an epileptiform convulsion lasting twenty minutes. Also a two months' old baby had a number of attacks of carpopedal spasm and frequent convulsions. The blood of all these patients showed a high Hgb., and there were frequent Grawitz granules in the red corpuscles.

The patient improved gradually under treatment, and by the end of nine months had recovered the strength of all his muscles except the extensors of both forearms, where there was still loss of power and marked atrophy.

LXXXIV.

Progressive Paræsthesia and Loss of Power, resulting in Paralysis of Respiratory Muscles.

The following are the notes taken at the time the patient was first seen: —

Single man, twenty-eight years old, working on the Boston Elevated Railroad. Previous history negative, except that he had gonorrhœa two years before, with an acute exacerbation one month ago, "without any venereal exposure as a cause." During the past three weeks he has been troubled by a cough with some yellow expectoration, but has kept about his work as usual. Seven days ago he noticed that the fingers of the left hand felt numb and prickly. The

next morning both hands and both feet felt numb; but he did not pay much attention to this, and worked all day climbing up and down a ladder. On the morning of the third day this same paræsthesia had extended to his knees, while the arms were involved to the elbows. Nevertheless, he could use his limbs and started to work, but had to give up after an hour on account of sharp stinging pain in his calves and a general sense of weakness. He went to bed, and has remained there ever since, though he did not notice any change until he tried to get up, on the fourth day. Then he found that he had lost power in his arms and legs. During the forty-eight hours since then there has been no progression of the paralysis noticed, but the patient has been troubled with stabbing pains in the legs and back, and to a less extent in the arms. There has been no difficulty in respiration, but during the past twenty-four hours he has found it hard to get strength enough into his cough to raise sputum from his throat. Swallowing is not affected, but he has vomited several times to-day. The action of the bladder is not involved, but the bowels have not moved for four days.

The patient is a well-developed and nourished man. His legs are completely paralyzed, and no movements of the upper extremities are possible except to a slight degree at the wrists. The respiration is shallow and somewhat labored, and seems to be wholly diaphragmatic. He frequently coughs weakly; and, if aided by quick pressure over the sides of the thorax at the time of the cough, he raises frothy, purulent sputum. The movements of the head are preserved. The pupils are normal and the eye muscles unaffected. The patellar and plantar reflexes are absent. The heart is rapid, but the sounds are normal. The lungs show numerous fine moist rales throughout. Temperature, 100.4 F.; pulse, 114; resp., 24.

There was no marked disturbance of sensation; but, before careful tests could be made, the breathing suddenly ceased.

Artificial respiration was performed, and by this means life was sustained for several hours, death then resulting from gradual failure of the heart. The urine was normal. The blood showed 34,600 whites per cu. m.m., and the sputum contained large numbers of pneumococci.

LXXXV.

Progressive, Spreading Paralysis; Death.

A young girl, fifteen years old, who had previously been perfectly well, found herself, one morning in December, very weak in the legs. She improved a little, and went to school; but while there the weakness increased, so that she returned home. In the afternoon she went out to drive. The next day she was worse, in that the arms had become weak as well as the legs, though sometimes improving slightly. On the second day she began to have difficulty in swallowing and in breathing, and her speech became slightly labored. There had been no sensory symptoms except a little pain in the right side and across the upper part of the chest, and also in her hips. She was seen by me on the fifth day of her illness. She then lay on her back with the arms flexed, and the hands thrown back with the palms up. There was no motion at the hand or wrist. Flexion at the elbow was possible, though feeble; extension impossible. Rotation outward at the shoulder was possible, though feeble; rotation inward, almost impossible. Respiration was rapid (33 to the minute), superficial, and exclusively diaphragmatic, except for the help of the cervical muscles. The cheeks were flushed. All motions of the head and eyes were free, but the pupils responded very little, if at all, to light, and were rather contracted. The temperature was normal at the time of the examination, but was reported as having been 103° F. during a part of the previous day. The fundus of the eye was normal. There was no paralysis of the sphincters. The reflexes, both deep and superficial,

were absent. There was, apparently, no impairment of sensibility; the patient felt a touch or a prick with ease over every part of the body. At one time there had been retention of the urine, but this was not then present. The patient had been perfectly clear in her mind, but was much annoyed by the collection in her mouth of mucus and saliva which she could not swallow. She grew steadily worse, and died on the seventh day of the illness. It was said that on the evening before she had had a slight vomiting attack, and that she then regained to some extent the power of swallowing which she had previously lost. Death occurred suddenly, without warning. No examination was allowed.

LXXXVI.

Numbness, Weakness, and Atrophy of Arms and Legs, with Atrophy; Improvement to a Certain Point only, then New Symptoms.

A middle-aged man consulted me some years ago, during a severe epidemic of the grippe, for extreme weakness of the arms and legs, and gave the following history. He had had, he said, an acute catarrhal attack, but was getting over it, so that he was feeling well and able to walk out, when one day, as he was crossing the street, one knee gave way, and presently the other. This was quickly followed by a weakness of the hands and arms, associated with pain and numbness. When I saw him, there was partial paralysis of all the muscles moving the fingers and hands, but especially the extensors. This was associated with a high degree of muscular atrophy, and also with marked sweating of the skin and tenderness of the muscular masses. He looked excessively ill; but, believing the disease to be acute neuritis, I gave a favorable prognosis. This case was peculiar from the fact that a considerable degree of inco-ordination was present, affecting both arms and legs; but this, too, is a symptom sometimes seen in multiple neuritis. I did not

see the patient again for about two years, though I had learned that he had in some respects improved. When he finally called upon me, all acute signs had disappeared, and likewise the atrophy of the muscles. On the other hand, he gave a history of having had lancinating pains and slight disorders of micturition. An examination of the pupils showed a well-marked Argyll-Robertson reaction, besides inequality and irregularity. I then ascertained that he had had syphilis some years before. The inco-ordination had persisted, and increased in severity and it was increased by closure of the eyes. The knee-jerks were not obtainable.

LXXXVII.

Pain, Impairment of Sensibility, Paralysis, and Atrophy, of the Muscles of Arms and Legs, especially those below the Elbows and Knees; Cerebral Complications.

(From Ross and Bury, p. 126). Female patient, thirty-six years old. She comes to the hospital for paralysis of the hands and feet, the details of which are given below. She states that for several years she had suffered at times from cramps in the legs and tingling in the hands and feet. The present weakness of the legs began about a month ago, the hands becoming helpless considerably later and rather suddenly. The results of the physical examination are in essential respects as follows: The muscles are everywhere flabby and apparently wasted, although this condition is sometimes concealed by subcutaneous fat. There is a little pitting on pressure over the ankles. Taking the movements from above downward, those at the shoulder can be performed with some force; and flexion at the elbow is moderately strong. Extension at the elbow is relatively weak. All movements of the hands and fingers are lost, except for feeble flexion of the fingers. The thighs can be flexed slightly, and the legs flexed feebly at the knee. All other motions of the legs, and all motions of the feet and toes are

lost. There is nystagmus on fixation, and oscillation on lateral rotation. The pupillary reactions are present, but sluggish. The wrist-jerks and knee-jerks are absent, and plantar reflexes likewise. Pain is complained of in the forearm and about the shoulders, and tingling is felt in the hands and feet. The sense of contact is greatly diminished for the hands and feet; the prick of a pin is felt, but delayed. The sense of position and passive motion is retained. There is very marked tenderness on deep pressure over the soles of the feet and over the muscular masses of the legs and arms. The irritability of the nerve-muscle systems to faradic electricity is diminished about in proportion to the severity of the local changes, and is absent for the extensor longus dig. pedis and the peronei (strong current). The heart, lungs, and abdominal organs are normal. Urine normal, temperature normal. The memory is defective, and the patient is troubled with hallucinations and nightmares. No sign of improvement had shown itself by the end of a month.

LXXXVIII.

"*Numbness*," *Soreness, and Weakness of Arms and Legs, after Typhoid.*

A middle-aged man, of excellent previous health, had a typical attack of typhoid fever in November, 1887. He was in bed for three months, and during part of the time was very ill, but he did not take any large quantity of alcohol. At the end of the first month he began to notice a soreness of the legs through their whole extent, with marked tenderness on deep pressure over the muscular masses, especially the quadriceps and the calf muscles. There was also a sense of numbness in the third and fourth fingers of the right hand, but no soreness of the right arm. The feet, also, felt numb and uncomfortable, especially the under surface of the toes. At a later period, during convalescence, the feet hurt him on walking, and oblong patches of numb-

ness made their appearance on the outer surfaces of both thighs (meralgia paræsthetica). During the height of the illness the legs became much wasted, and slight but well-marked impairment of sensibility to touch was present over the ball of the foot on both sides, the toes, the little finger on one hand, and an area, four by six inches large, along the outer surface of the left thigh. Well marked R. D. was found on electrical examination of the interosseous muscles of the feet. The patient improved gradually, and recovered completely after some months.

LXXXIX.

Weakness of Arms and Legs with Extensive Paræsthesia.

This patient was an unmarried business man, forty years old. His illness began in January, 1888, with numbness and tingling sensations in feet and hands, followed very quickly by muscular weakness. Even before this he had noticed for some little time that his right arm would "go to sleep" easily at night, and this symptom would be brought on by lying on the left side. At the first examination, which was on January 11, he complained mainly of this sense of numbness which then reached as high as the waist, and involved the perinæum and the genitals. The foreskin was almost devoid of sensibility. The fingers were also numb and prickly, and for the past few days there had been a stiff feeling in the face, especially the cheeks and upper lip, and the tongue had felt thick. He thought his eyesight was not quite so clear as formerly, but there was no distinct double vision. (The patient had been liable for a long time to occasional attacks of loss of half the field of vision, lasting for half an hour or more, and followed by a severe headache. Other members of the family had had similar attacks.) The sphincters were not involved. There had been no pain anywhere, though some of his muscles felt sore on pressure. He had felt rather

heavy for a few days, but had had no marked fever and no mental symptoms.

Previous History.— The patient had had gonorrhœa, but never a chancre to his knowledge. He had been in the habit of smoking and drinking heavily, sometimes to the amount of six small tumblerfuls of liquor a day. He had had rheumatic fever as a child, but there had been no subsequent attacks. Three weeks before the present symptoms he had been exposed in a heavy rain.

Physical Examination.— There was great difficulty in going up and down stairs, and this was referred especially to weakness of the thighs. Dorsal flexion of the feet was imperfect, and all the movements of the legs were weak though none were lost. He could raise himself on the toes of both feet together, but not on the toes of one alone. Both extension and flexion of the hands and feet were somewhat feeble, about two-thirds as strong as usual as measured by the dynamometer.

The urine contained no sugar, but a very slight trace of albumen. Sp. gr. was 1031. The heart's action was slightly intermittent, but otherwise normal; and there were no murmurs. The muscles of the calves and thighs, on both sides, and, in less degree, the muscles of the forearm were tender on deep pressure. There was a wide-spread impairment of sensibility to contact and pricking over the hands and feet, though this amounted to no more than that the sensations appeared to him somewhat unnatural. He could stand well with the eyes closed. The knee-jerks were absent on both sides.

The electrical examination showed a quantitative impairment of reaction of the affected muscles of moderate degree. No R. D. The parts where this impairment of reaction was especially studied were the thenar muscles [F, 108 m.m. (normal, 120 m.m.); (G, 2 m.a. (normal, 1 m.a)]; and the peroneal nerve [F. 90 m.m. (normal, 120 m.m.)]. The reaction of the vastus internus seemed to be about normal.

The course of the case was one of gradual improvement. This was only interrupted by the occurrence of inflammation of the right knee, of moderate intensity, which came on in the fourth month of the illness, and lasted about three weeks. The whole duration of the illness was about six months.

XC.

Diffuse Paralyses of Sensation and Motion of Long Duration; Nearly Complete Recovery.

This case is that of a female patient, twenty-eight years old, unmarried, nurse by profession, who came to the Massachusetts Hospital in 1896 with a high degree of general weakness of both arms and legs, and marked impairment of sensibility, of such a kind that the sense of contact was much less affected than the sense of pain as developed by pricking with a needle. These symptoms subsequently passed away to a great extent, and in February, 1900, I had the opportunity of examining her again, which I did with the following result: It appeared that in childhood she had been nervous, though active and intelligent, and that she had had an attack of chorea during that period. When eight years old she had scarlet fever, and at about the same time a pain in the right elbow called "rheumatic." This was attended by a drawing up of the little finger of the right hand. In 1890 or 1891 she had had a severe shock due to an insane patient jumping on her while she was in a stooping position. She was confined to the bed for three months by this, and became excessively weak, but seemed eventually to recover. In 1893 she had typhoid fever, and while still sick in bed she was attacked with pain and paralysis of the right arm, which came on very rapidly. The great toe of the right foot became paralyzed at the same time. Eventually, as will be seen, the whole of the right leg, and, in fact, all the limbs, became involved, but this was not until considerably later. During the next six or seven months she dragged

herself about, though with difficulty on account of general weakness. The paralysis of the right arm had been so great that all motions of the hand had been lost, and most of those of the elbow and shoulder but for a time there was an improvement, so that she could move the arm at the shoulder, though she could not use the hand. Gradually, her legs became very weak, especially the right. The sensibility of the most affected parts had been seriously impaired from the beginning, so that, for example, the right foot and hand felt "numb and dead," and the sensibility of the skin became greatly impaired both as regards contact, temperature, and pain. For the next two years she continued to grow worse, until finally she could not stand; and it was at this period that she came to the Massachusetts General Hospital. The left arm did not become affected until about a year after the feet. When the paralysis was at its height, the motions of the jaw became affected, so that she had difficulty both in articulating and masticating, and the trunk muscles became so weak that a spinal curvature came on. She suffered also from painful flexor spasms of the limbs, including the fingers and toes and the muscles of the neck. For a time there was an incontinence of the urine, but this was transient. In March or April, 1897,— *i. e.*, more than three years after the onset of these symptoms,— she began to improve, and gained rather rapidly, so that in the course of two or three months she could walk a little on the street without crutches, though still requiring a splint to keep her knees from giving way, and a corset to support the body. This improvement has continued up to the present time, so that now there is but little trace of the paralysis of sensation or motion except as regards the hands. Here the signs of "claw hands" are present in a moderate degree, though the faulty position of the fingers can be nearly corrected by a strong effort of the will. The two smaller fingers are permanently crooked in both hands to some extent. The sensibility of the skin to contact is almost perfect, though less good over the two

smaller fingers than elsewhere. On the other hand, the prick of a pin and changes of temperature are scarcely felt over some portions of the hand, especially in the areas supplied exclusively by the ulnar nerves. Over these portions a pin may be thrust deeply into the skin without exciting pain, whereas in other areas near by the sensibility to pricking seems to be normal. This impairment to sensibility is much more marked for the right hand than for the left, and, in fact, the sensibility to heat and pricking over the right hand and forearm is much less acute than over the left, though above the elbow this difference is not seen. The right side of the face is also slightly less sensitive than the left side, whereas there is no difference between the ears or the sides of the neck. The naso-labial fold is a little less marked right than left, and the right pupil is slightly larger than the left. The right hand is slightly dusky in color as compared with the left, and somewhat cooler. The electrical reactions indicate a quantitative impairment of response, both to faradism and galvanism, of the intrinsic muscles of the right hand. The spinal curvature has passed away mainly, if not entirely, the gait is normal, and the knee-jerks are present and even rather lively. The patient's general health is now very good, so that she can endure a large amount of mental and muscular exertion without suffering.

XCI.

Delirium, Mental Confusion, Extensor Paralysis of Extremities.

This patient was in a disturbed mental state when first examined, and no reliable history could be obtained. On being questioned concerning her condition she seemed confused, and answered in a rambling and incoherent manner. She was a large, obese, deeply jaundiced woman, about forty years of age. The pupils were equal, and reacted to light. The voice could hardly be raised above a hoarse whisper,

and the larynx and vocal cords were found to be much reddened. The tongue was dry and clean, and was coarsely tremulous when protruded, though it came out straight. The same coarse tremor accompanied the movements of the lips and fingers. The heart and lungs were in a normal state. The abdomen was full, and the liver extended a hand's breadth below the costal margin, the surface being smooth and the edge even. The spleen seemed to be normal in size. There was no œdema of the legs. The superficial and patellar reflexes were absent.

The temperature varied between 100° F. and 102° F. for several days, and the mental confusion gave place to a mild delirium, which became more active at night, when the patient would spring up and cry out in terror that cats, or rats, were in her bed, or that people were after her.

About ten days from the time she was first seen it was noticed that she had wrist-drop of both hands, and was unable to extend the fingers, while one leg would become flexed under the other and she would be powerless to remove it. While in this condition it was impossible for her to turn in bed.

Examination at this time showed loss of sense of pain over both arms and legs, while there were points tender to deep pressure along the extensor surfaces of all four extremities. There was no disturbance of the bladder or rectum. The urine showed the presence of bile, but was otherwise normal, except for signs of bile-irritation. Examination of the blood showed Hgb. 64 per cent.; white corpuscles, 24,400 per c. m.m.

While she was still in this condition, there was a sudden rise in the temperature one morning, with a rapidly increasing rate of pulse and respiration, while the lips and nails became cyanotic. This condition was associated with the appearance of signs of consolidation over a small area in the left lung, and the patient died in a few hours. The diagnosis was confirmed by autopsy.

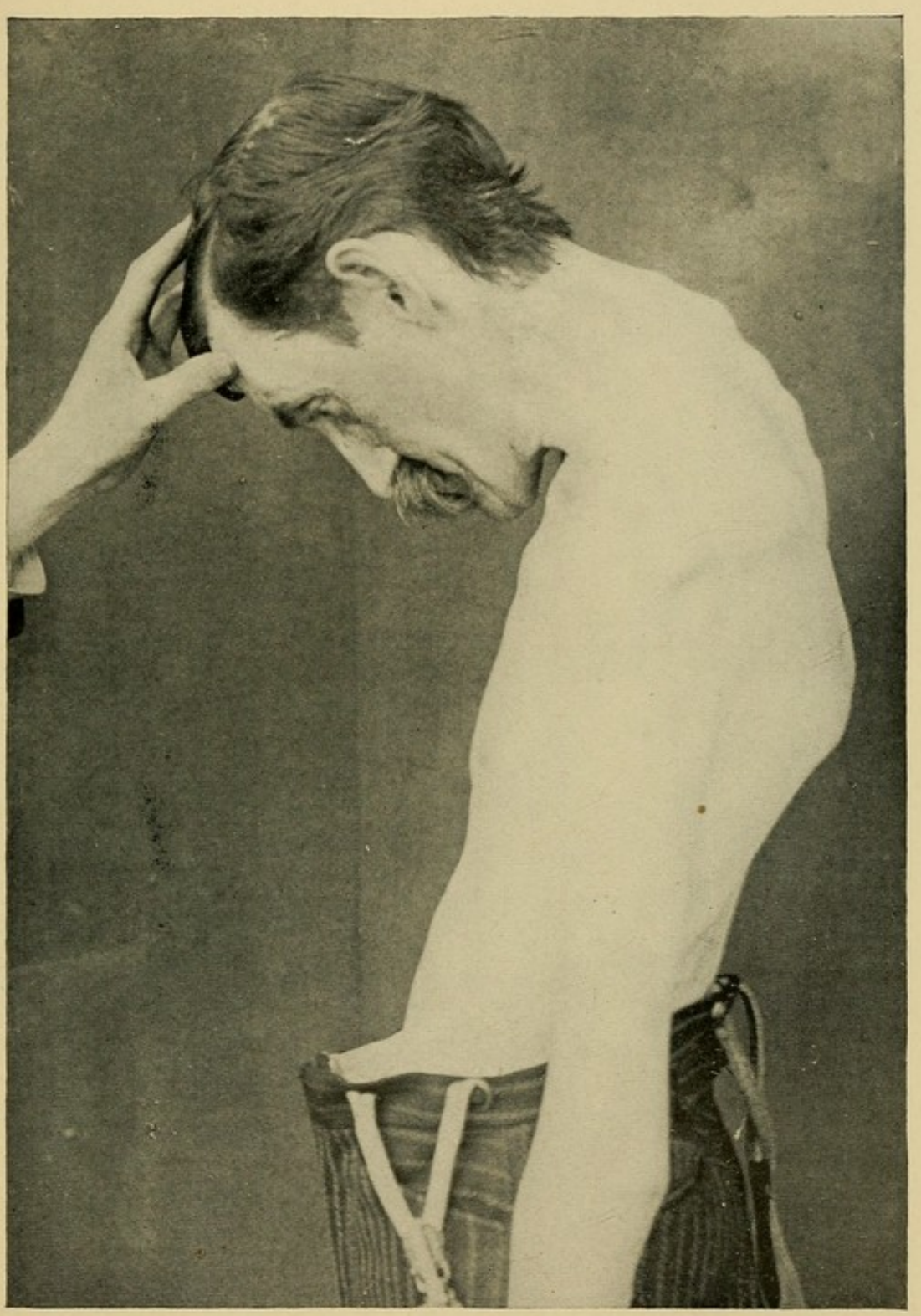
XCII.

Progressive Atrophy of All the External Muscles of the Body.

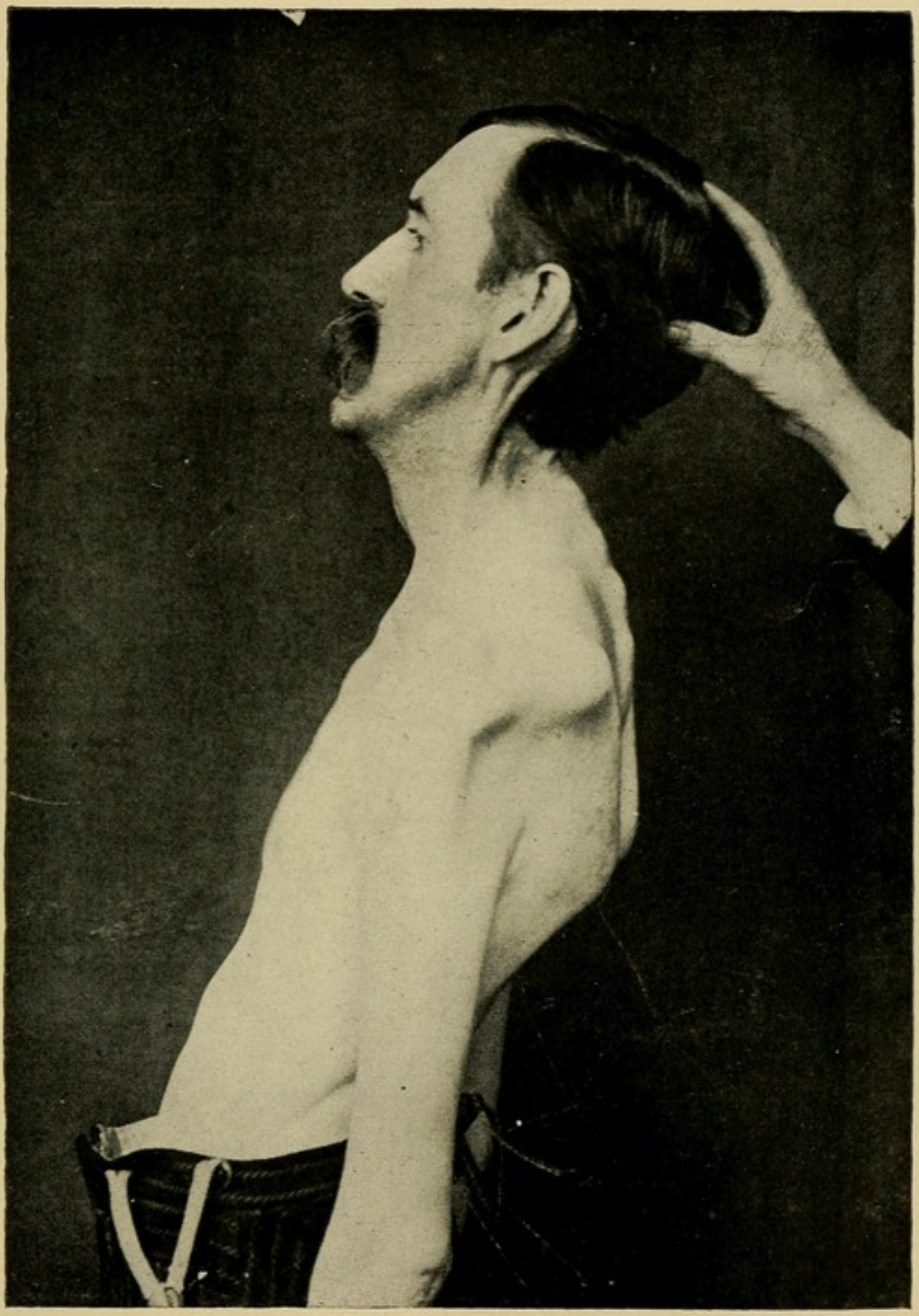
A young married woman, twenty-seven years old, of good previous health and good family history, presented herself, on Oct. 10, 1898, complaining of weakness of the hands, especially of the left, and, to a less degree, of the legs also. The hands had begun to trouble her nine months before, but for the past two months they had been useless for any sort of work, and both writing and sewing had become almost impossible. She had noticed for some months past that she had stubbed the ground with her left toe, and that when she walked her back had felt weak and tired. Crampy pains had been felt in the left arm from time to time. All the movements were worse in cold weather. Physical examination showed an atrophy of all the intrinsic muscles of the left hand, and to a less extent those of the right. There was also more or less diffuse atrophy of most of the muscles of both arms, both shoulders, the back, and the legs. Fibrillary twitchings were seen in the hands, arms, and back muscles. The knee-jerks and wrist-jerks were both exaggerated to a high degree, and ankle-clonus was present. An electrical examination showed diminution in the faradic irritability about in proportion to the atrophy, and the presence of R. D. in the muscles which were the most seriously affected, such as those of the left thenar eminence. The tongue deviated slightly to the left, and the right side of the face was slightly atrophic. From this time on the disease progressed slowly, though with brief intermissions.

Difficulty in articulation soon showed itself; and finally, in 1900, the muscles of the neck became so weak that, if the head fell backward, she could not bring it forward, even with the aid of her arms.

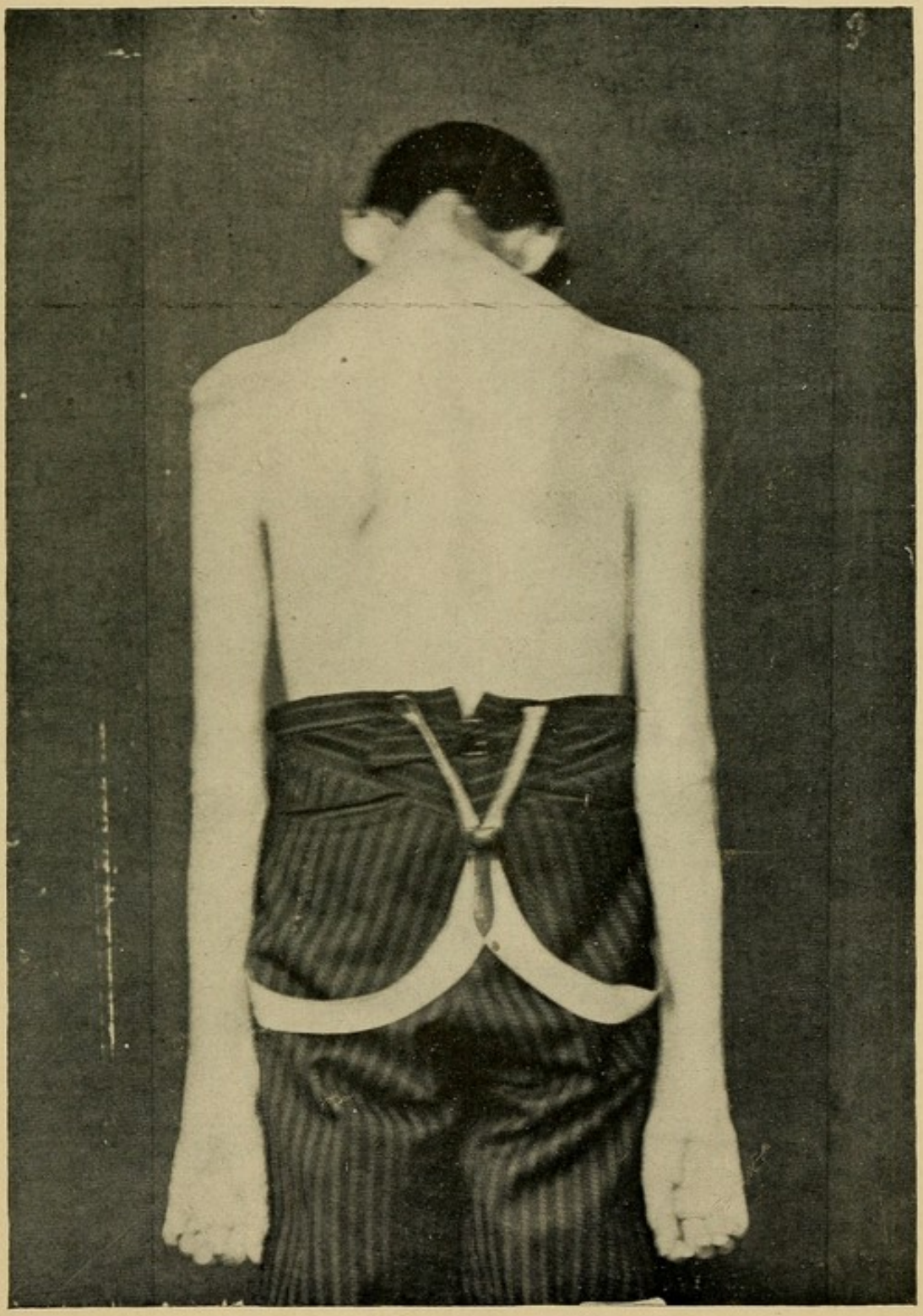
While in this condition, she became pregnant; and the question arose whether abortion should be performed.



Case XCIII.



Case XCIII.



Case XCIII.

XCIII.

Gradually Progressive Muscular Wasting, beginning in the Hands.

[Case reported by Dr. H. C. Baldwin.]

The patient whose condition is illustrated by the accompanying picture was a man of fifty-two, who had led an exceedingly active life, both mentally and physically. He had drunk persistently and to excess, and had had syphilis. His first intimation of his sickness was in 1889; and he died in 1899, cheerful and clear-headed to the last. The thenar muscles of the right hand were the first to go, next the supinator longus, and then the deltoid. The left arm was attacked in similar fashion to the right, but considerably later. He came to the hospital in 1893, and at that time he was wholly unable to move either arms or fingers. Furthermore, the posterior muscles of the neck had become so much affected that, unless he wore a brace, his head fell forward on his chest, and could only be replaced by the aid of the hand or of its own weight. The anterior neck muscles were but little involved, and at that period the muscles of speech, facial expression, and deglutition, were also free. On the other hand, the costal muscles were so feeble that the breathing was almost wholly diaphragmatic. The leg muscles were somewhat wasted, though not nearly so much as those of the arms, and he could still walk a couple of miles without difficulty. He had control over the sphincters of the bladder and rectum, and the cardiac and sexual mechanisms were in a substantially normal condition. The knee-jerk was normal on the right side, but exaggerated on the left; and ankle-clonus was present on the left side.

He grew gradually worse, and died with bulbar symptoms. For two or three years before his death his bladder had been sluggish, and he had had no sexual desire.

XCIV.

Progressive Loss of Muscular Power, gradually involving almost All the Muscles of the Body; very Chronic Course.

This patient, who is still living, and fifty-nine years old, presented herself at the Massachusetts General Hospital in 1887. Even then she was so weak that she had great difficulty in rising from the chair to her feet. All her muscles became easily fatigued, even those of mastication; and she suffered greatly in cold weather, no matter how warmly she was dressed. All four limbs were involved, but the legs more than the arms. The muscles most affected were those which extend and flex the thighs on the trunk. These muscles were greatly atrophied, but even those of the forearms, and of the legs below the knee, were evidently altered; and that, too, more than their size would indicate, since it was evident that the atrophy was somewhat masked by the presence of a tissue which was not wholly muscular. It appeared, on inquiry, that this patient had had difficulty in using her legs ever since she was seventeen years old, and perhaps still longer. She used then to notice that she could not run as well as other girls, and that it was hard for her to step up on to a high step.

She said that her father was a strong and healthy man, but had died of cancer when sixty years old. Her mother was a healthy woman, but had three paralytic shocks, and died at the age of eighty-six. The father had two brothers, one of whom began at seventeen to be troubled with symptoms similar to those of this patient; and after a time he became entirely helpless, so that he could not even hold his head erect or use any part of his body. He lived to the age of sixty. The other brother was said to have been well up to the age of twenty-five, when he had some sickness called rickets, from which he never recovered. He, too, became gradually helpless, so that he could neither stand nor walk alone. He

Case XCIV.

lived to be nearly sixty, and died within a day of his eldest brother. The paternal grandfather had a sister who was a cripple. The patient does not know at just what age her illness came on, but she became helpless like the rest, so that she could not even get in and out of the bed alone. The patient herself suffers from chronic psoriasis, which is said to have been prevalent in the mother's branch of the family.

On physical examination it was found that all the muscles of the extremities were small and dense, and the contractile portions very short. There was no fibrillary twitching. In consequence of the weakness of the trunk and thigh muscles, she was unable to rise from the ground or a chair without the aid of the hands and arms. The weakness of the glutæi made her gait very waddling in character, and the fact that she could not bend the foot at the ankle increased the difficulty of locomotion. Nevertheless, she is still living, and able to get about more or less, although it is now forty-two years since the first signs of the difficulty appeared.

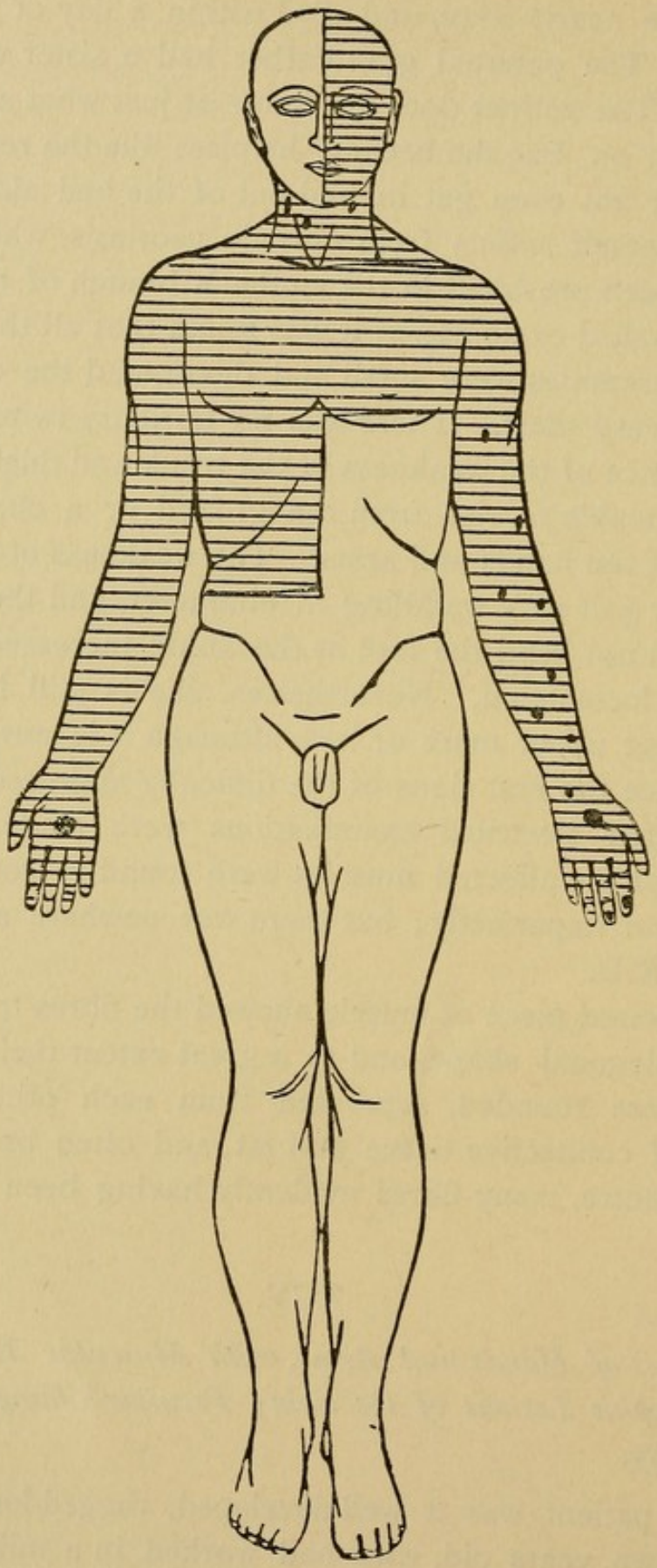
Repeated electrical examinations were made, with the result that the affected muscles were found to contract very slowly and imperfectly; but there was nowhere any characteristic R.D.

An excised piece of muscle showed the fibres to have lost their polygonal shape, and to a great extent their striation. They were rounded, separated from each other by wide tracts of connective tissue and fat, and often broken down at the centre, many fibres evidently having been destroyed.

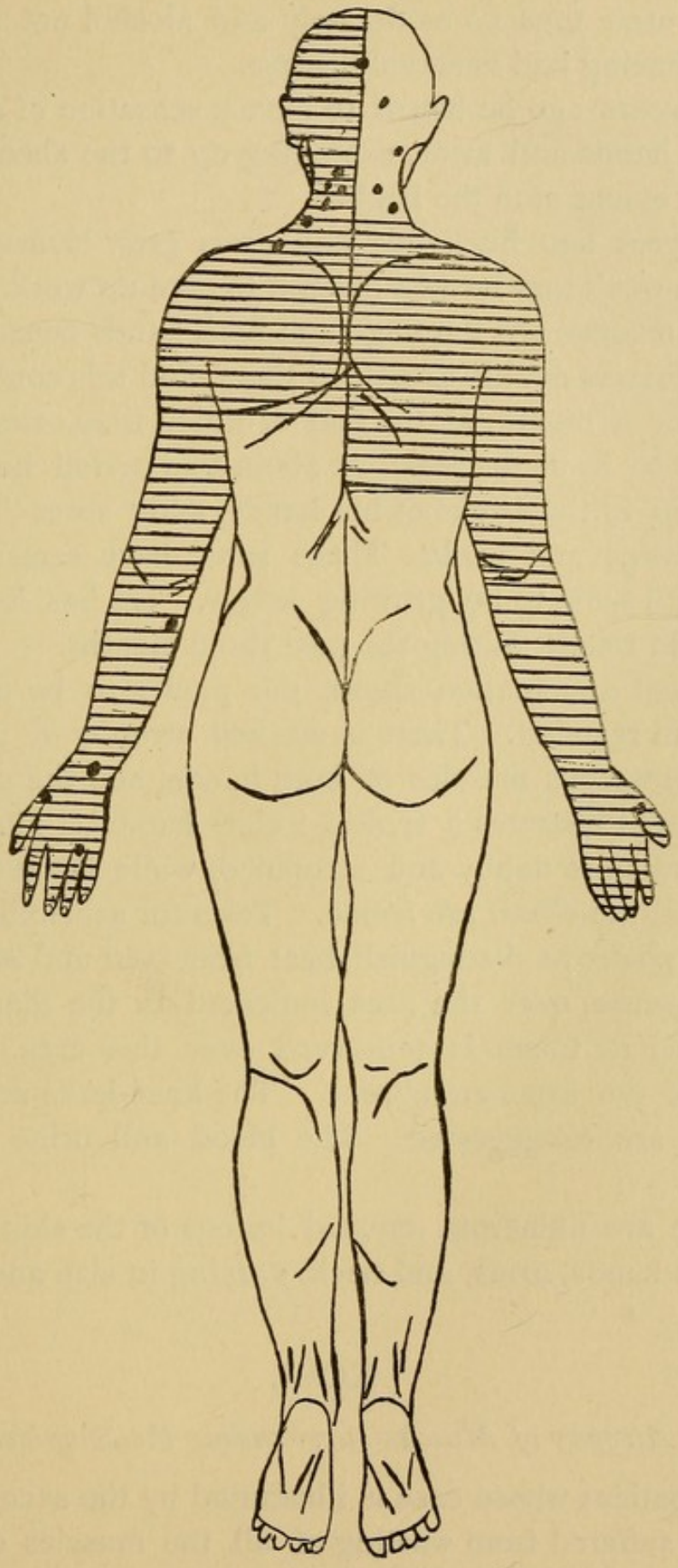
XCV.

Numbness of Hands and Arms, with Muscular Wasting and Trophic Lesions of the Skin; Peculiar Changes in Sensibility.

This patient was a well-developed, rugged-looking man, twenty-two years old, who had worked in a mill since boyhood. He had never been sick so far as he could remember.



CASE XCV.
Showing Area of Analgesia and Trophic Skin Lesions.



CASE XCV.
Showing Area of Analgesia and Trophic Skin Lesions.

He has used tobacco moderately and alcohol not at all, and denied having had venereal disease.

Two years ago he began to have a sensation of numbness in both hands and arms, extending up to the shoulders and to some extent onto the back.

One year ago his hands and arms grew clumsy, and became so weak that he was obliged to give up work.

Five months ago the fingers of both hands became flexed. so that he was unable to extend them, and this condition persisted for a month, at the end of which time extension was possible to some degree. At about this period he began to have pain in the backs of his hands, and "sores" appeared on his arms and neck. These sores have remained ever since, and seem to be growing larger. He has lost twenty pounds in weight during the past three months.

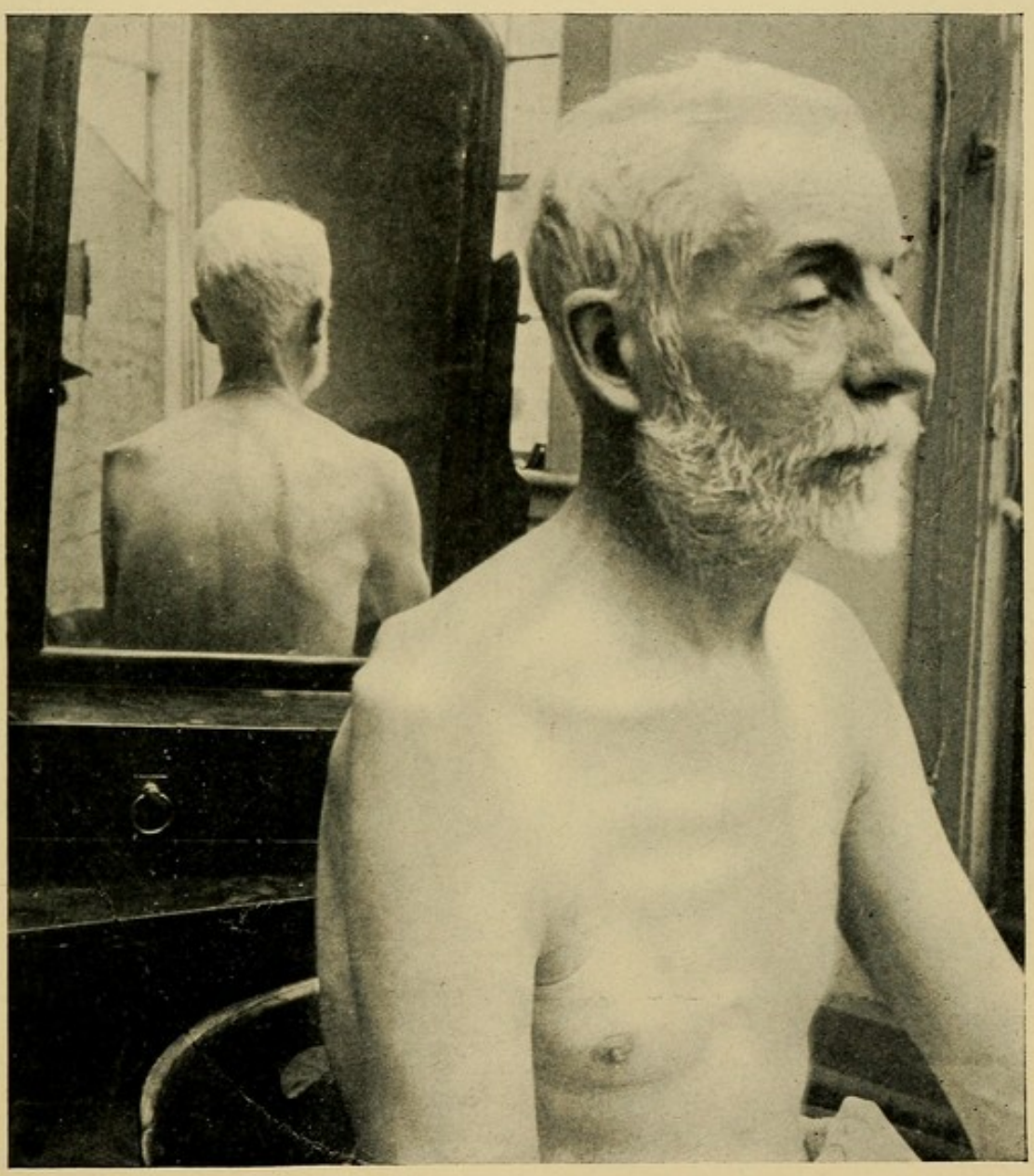
Physical examination shows the pupils to be equal, and normal in reaction. There is marked atrophy of the thenar and interosseous muscles of both hands, and the position of the fingers illustrates a typical "claw hand." The muscles of the arms are flabby and atrophied, while flexion and extension at the elbow are feeble. Tests for sensibility show a loss of power to distinguish heat from cold and an absence of pain-sense, over the area indicated in the diagram, but the sense of touch is preserved over this area. The reflexes of the arms are absent. The knee-jerks and plantar reflexes are exaggerated. The blood and urine are both normal.

There are numerous crusted lesions of the skin scattered over the hands, arms, and neck, varying in size and shape.

XCVI.

Atrophy of Muscles surrounding the Shoulder.

The patient whose case is illustrated by the accompanying picture suffered from wasting of all the muscles concerned in moving the right arm at the shoulder, and also from pain



CASE XCVI.

about the shoulder joint, and limitation of motion. Some months previously he had had a fall, in which the shoulder was moderately injured, and as a result of this he had been obliged to carry the arm in a splint for a number of weeks. Even then there was a great deal of aching pain about the shoulder, but when the bandage was removed and an attempt was made to move the arm this pain became very acute, especially if an effort was made to carry the hand behind the back or behind the head. Furthermore, motion in these directions was absolutely restricted to a very considerable degree, as if by firm adhesions about the joint. The pain was mainly felt on the outer surface of the upper arm, near the insertion of the deltoid, but it ran down to some extent even into the hand, and it was increased by lying on the affected side and by changes of weather.

There was marked tenderness at a point in front of the shoulder joint, near the coracoid process, and also at the back of this joint.

Under prolonged massage and passive motion and tonic treatment a considerable degree of improvement was finally brought about.

XCVII.

Weakness of the Muscles of the Forearm, especially the Extensors.

Many years ago I was called to see a man who had been suffering from great pain and weakness of the arm, for several weeks.

On examination I found all the muscles of the forearm, both flexors and extensors, to be greatly wasted, although there was no paralysis, and only such weakness as would be explained by the loss of muscular tissue. Besides this he had the signs of an acute inflammation of the wrist joint, which was swelled and excessively tender.

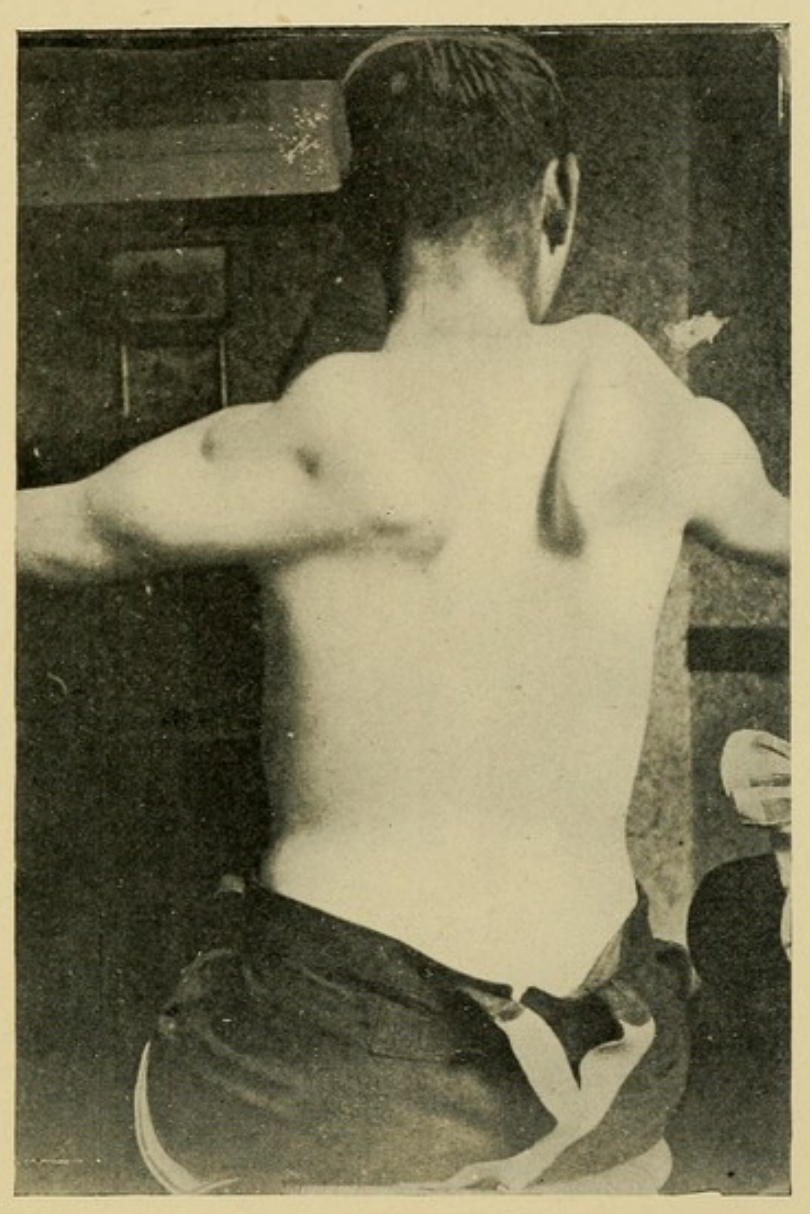
XCVIII.

Diffuse, Progressive Muscular Weakness, with Trophic Changes.

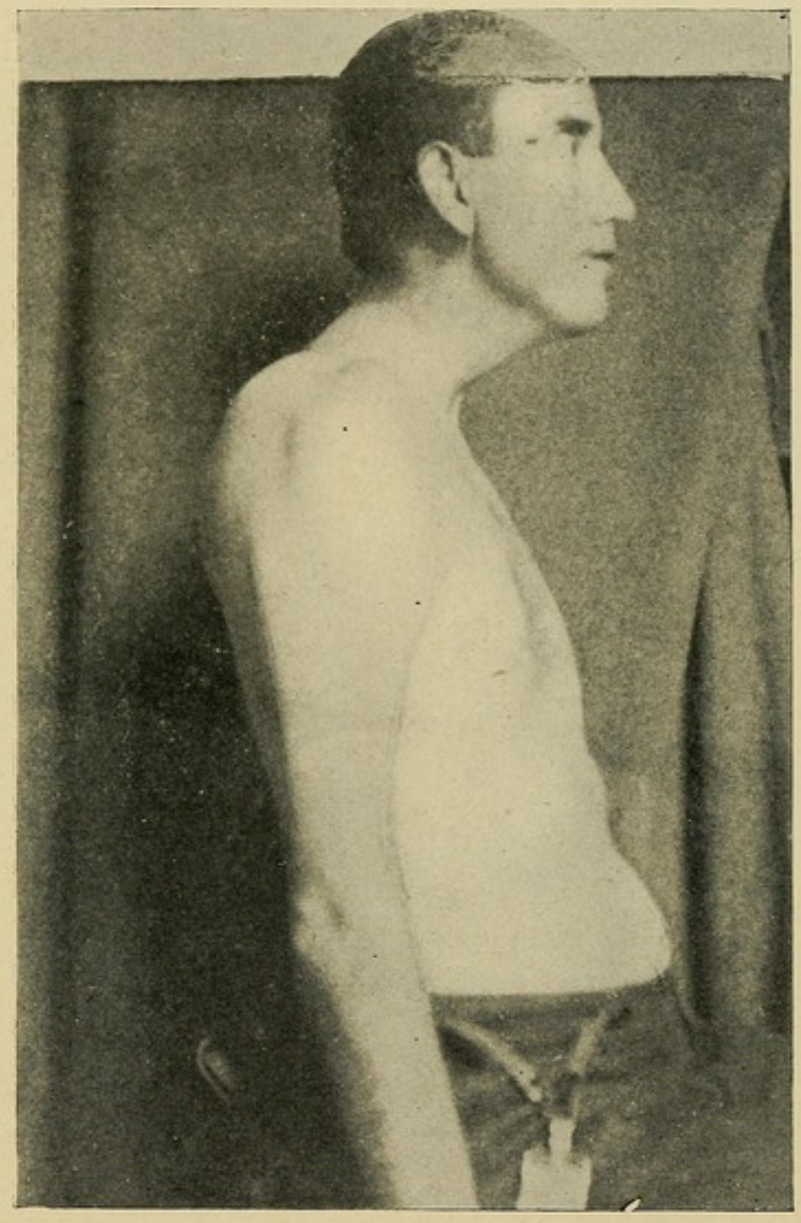
This patient is a man thirty-seven years of age. He was always well until thirteen years old, and was as strong as any of his companions in their games. At the age of thirteen he began to have stinging pains in the back of the neck and shoulder-blades and felt a loss of power in the shoulder on lifting heavy objects. He also noticed that his scapulæ became prominent when he raised his arms at the shoulder. He could whistle and use the lips well till fifteen, but then they began to grow weak. At eighteen the extensor muscles of the right hand became weak. At thirty the right leg began to drag on account of weakness.

He has never noticed any extreme weakness of the back muscles, though the back often becomes tired from long sitting, and it is difficult for him to rise from a recumbent position. There has been a tendency to toe-drop for six or seven years. For the past year or two the eyes have felt "weak." The vision seems all right, but it tires him to look at anything for a long time, and occasionally there is diplopia for a moment. He kept at his occupation of lasting shoes until thirty years old, and could do a regular day's work in spite of his muscular defects. Since then he has supported himself by lighter work, chiefly canvassing. He used to drink heavily at times, but never had any sort of venereal disease.

Physical Examination.— There is a marked asymmetry of the face and head, the chief feature being a bulging in the region of the right temple, while there is a distinct flattening of the skull over the outer part of the left eyebrow. The ears are rather lacking in convolutions and not of exactly the same shape. The face is almost devoid of expression, all the muscles being wasted. The movements of the frontalis muscle are weak and deficient, especially on the left. The eyelids close feebly, and can be opened with the finger very easily, against the patient's will.



Case XCVIII.



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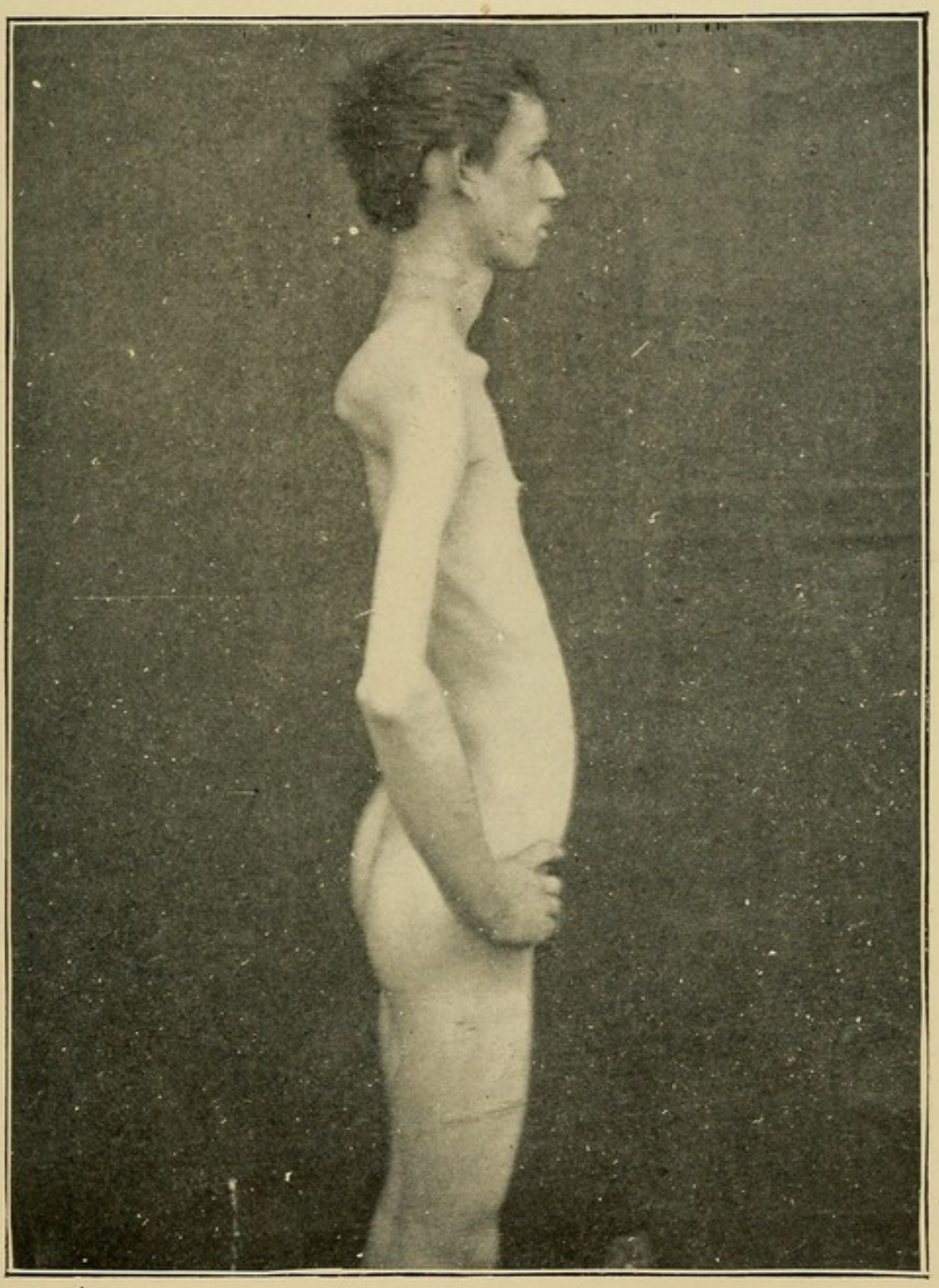


Case similar to XCVIII.

The movements of the eyes are normal, but, when they are turned strongly to one side, twitching movements are seen. All the lower facial muscles are weak; the lips are thin; the corners of the mouth can be drawn up or down hardly at all; whistling is impossible. In the standing position there is marked lordosis; and the head is thrust forward so that the lower cervical and upper dorsal vertebræ are very prominent, as if from Pott's disease, this appearance being increased by the atrophy of the trapezius muscles. The shoulders droop much, and can only be feebly and imperfectly raised.

The scapulæ stand out from the spine, and the lower angles nearly meet when the arms are extended. The rhomboids and latissimus dorsi are much atrophied. The posterior muscles of the neck (except the trapezius) are fairly well preserved. There is no fibrillary twitching to be seen anywhere.

The deltoids are very large and abnormally firm, even when at rest; and the same condition is present in the supra and infra spinatus muscles. The muscles of the back are feeble and apparently atrophic. All motions of the legs are preserved but are very weak, especially those of the thigh muscles, but the only movement which is wholly lost is dorsal flexion of the foot.

The forearm muscles are relatively well preserved. The biceps and triceps of both arms are small and weak, flexion at the elbow being almost impossible, though partially performed by the brachialis anticus. In walking, the feet are lifted high to clear the toe from the ground, and thrown forward (*steppage*). The knee-jerks are lively and equal.

XCIX.

Wide-spread and Progressive Muscular Weakness, with Nutritional Muscular Changes, in a Boy of Ten. Older Brother similarly affected.

In the month of February, 1901, two small boys, thirteen and ten years old, were brought to the hospital for advice, their parents, who were Russian Jews, having transported them hither all the way from Texas in the hope of relief.

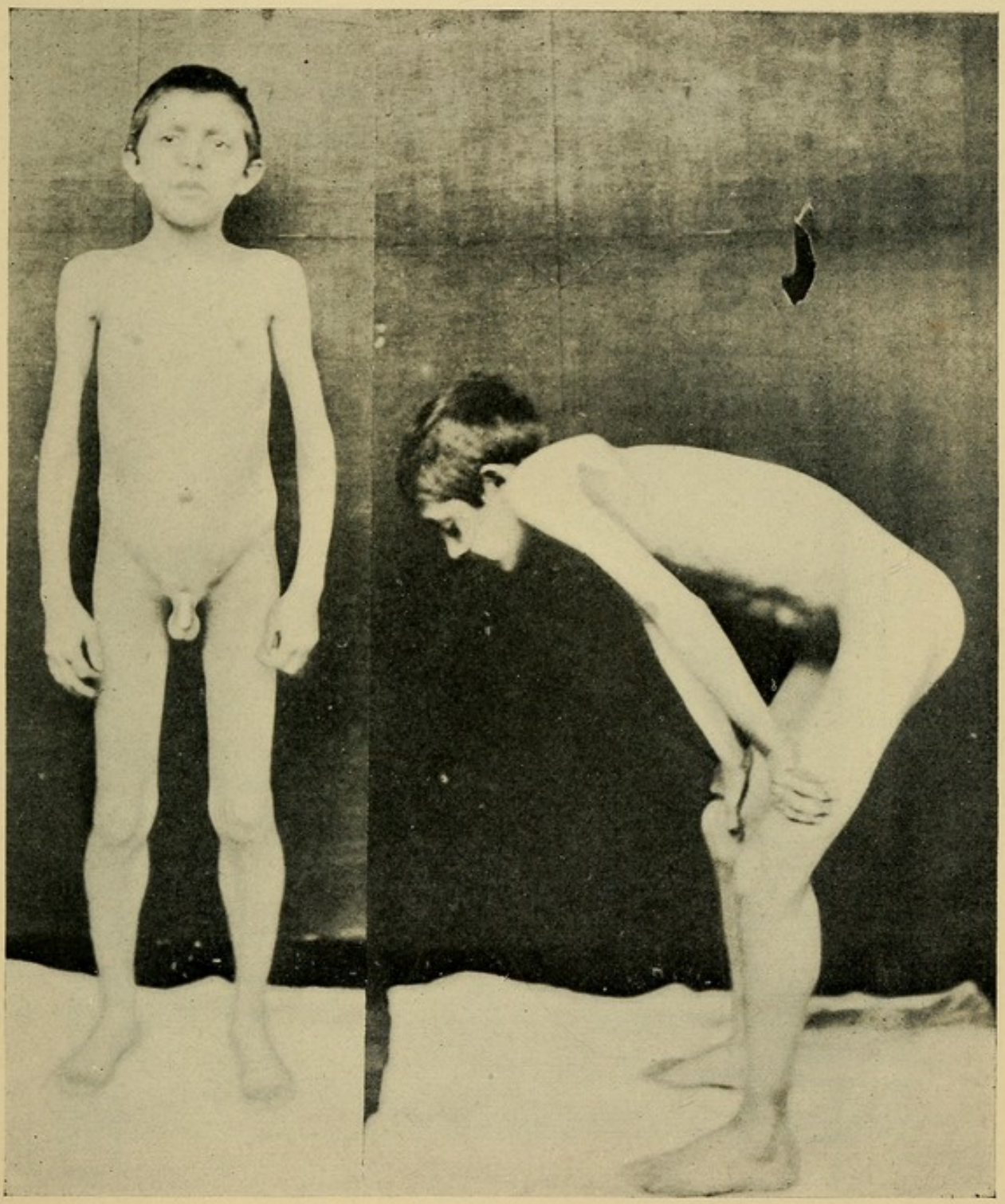
It is the younger boy whose picture is given; but the condition of his older brother was similar to his, only worse, so that he was unable to stand alone.

The history given was also substantially the same in both cases. Their own story was that they had been well until the onset of the disease, which had attacked the older brother two years ago, the younger within only five months.

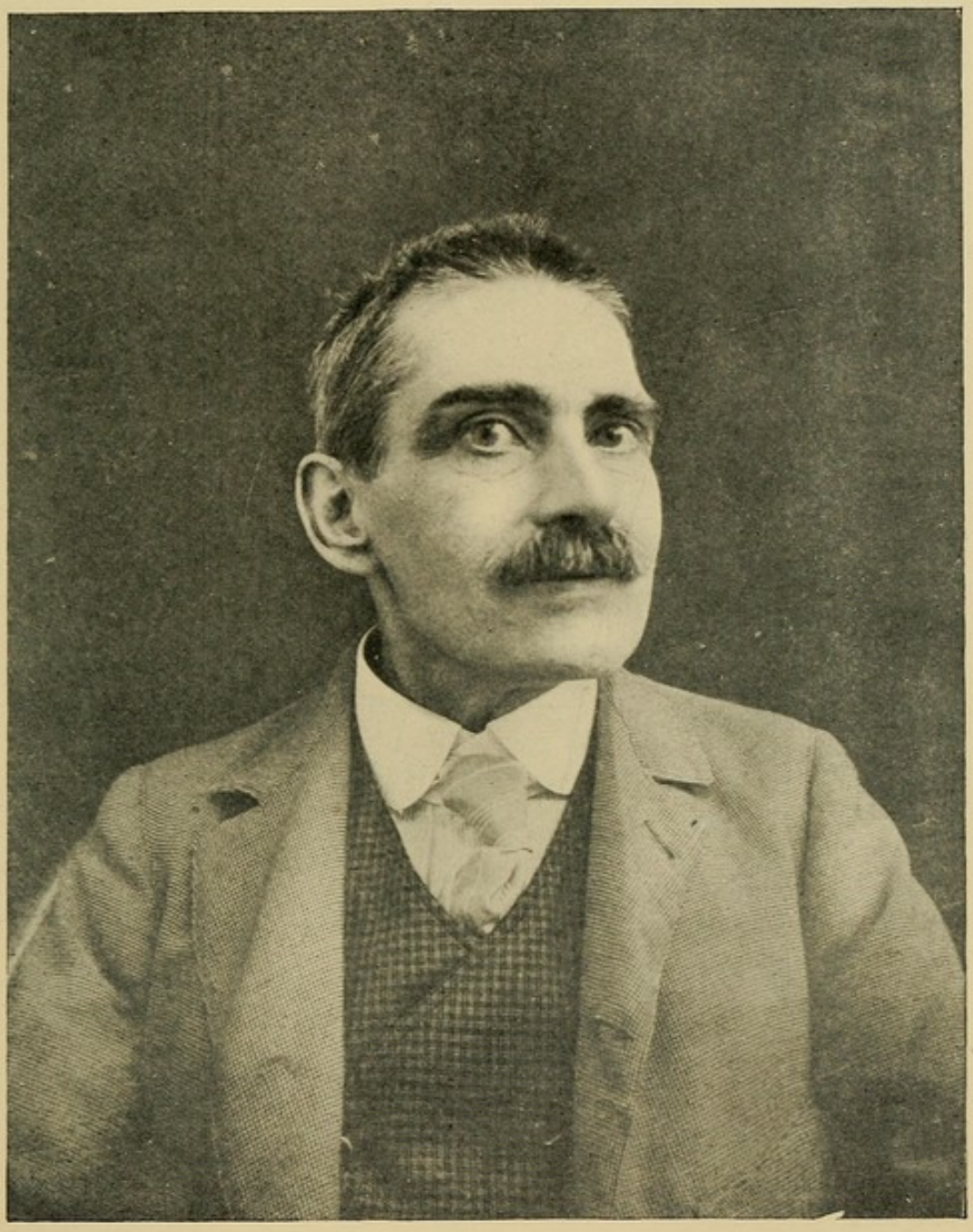
The symptoms had come on, they said, very suddenly. One of the boys declared that he was walking along and feeling all right, when his back gave way so that he could only hold himself erect by throwing the abdomen forward and shoulders back. Now the older brother is so feeble that he has to be carried in arms, while the younger still walks, but with great difficulty and with a waddling gait. The trunk is in a position of marked lordosis. The arms are extremely feeble, as well as the legs, and, when they are raised from the shoulder, the scapulæ stand off from the chest and almost touch each other behind.

The diagnosis can easily be made with the aid of this description and by an examination of the photographs. The students are especially requested to notice the contours of the muscular masses, in order to detect the signs of other changes beside those of an atrophic character.

It may be said that certain of the muscles had a peculiarly dense, inelastic feeling, even when not contracted.



Case XCIX.



Case C.

C.

Paresis of the External and Internal Eye Muscles, Some Difficulty in Use of Limbs.

This patient is a man of forty-five. The chief thing seen, when one looks at him, is that whether walking or sitting, he carries his head constantly turned to the left. Otherwise, he looks fairly well, although rather thin and pale. When one looks at him more closely, it is seen that the facial muscles twitch here and there in small bundles. This is more marked on the right side than on the left, and is most noticeable over the forehead and about the lips and chin. The man is a clerk, and says that he had gonorrhœa ten years ago, but no "sores," to his knowledge. Six or seven years ago he began to have cramps in the calves of the legs at night, and since then the legs have been growing weaker, though not to a high degree. Three years ago he found it difficult to read his newspaper, and so went to an oculist, and then first discovered that although he could move his eyes to the right, he could not move them to the left. It was then, too, that the position of the head was first pointed out to him. It had gradually been assumed without his really being aware of it.

For the past couple of years he has had severe pain in the right arm from time to time, just above the elbow, sometimes by day, sometimes by night; and five weeks ago this became so bad that he went to the Massachusetts Hospital for advice. At the same time, also, he began to have pains in the left occipito-parietal region. He says his hands become numb at times, if the arms lie long in one position. Possibly some light is thrown on the cause of the pain in the arm by the fact that the movements are restricted at the shoulder, and that if carried out by force severe pain is felt in the upper arm. When he walks, he goes so unsteadily people think him drunk, though, in fact, he does not take liquor at all.

Not only is the head turned to the left, but it trembles, though with so fine a motion that close examination is required to notice it, and, when the muscles of the neck and back are examined, fine fibrillary contractions are seen to play over the surface, similar to those seen about the face. The right pupil is slightly larger than the left; and neither of them reacts either to light or with accommodation. He can close both eyelids, but the right one so feebly that but very little force is required to raise it against his effort. Both eyes turn strongly to the right, and the left cannot be turned back again. The fundus of the eyes is normal. There is no change in the speech. There is slight atrophy in the supra-scapular muscles on the right side. The muscles of the limbs are not remarkably atrophied.

The knee-jerks and the wrist-jerks are both exaggerated. Ankle-clonus is present on the left side, and the Babinski reflex also. His memory, he says, is failing, and his sleep is disturbed by pain. He has been under observation for some months without material changes having been seen.

CI.

Severe Headache, with Paralysis of Certain Eye Muscles.

In October, 1901, a Syrian of middle age applied for relief of throbbing headache, which had been troubling him for three months. This was located in the left supra-orbital region, and extended over the top of the head to the occiput. It had been almost constant, but was especially severe at night, so that he could not sleep without the use of sedatives. Lying with his head resting on the left side increased the pain. He had been unable to attend to his occupation of silk-weaving since the trouble began.

During the past two weeks there had been drooping of the left eyelid, and double vision on looking toward the right. The vision was thought to be growing poorer. There had been no nausea nor vomiting. The patient did

not use alcohol in excess; but he had contracted gonorrhœa twice, six months and three years previously. There was no history of syphilis.

Examination showed marked ptosis of the left eyelid, while the pupil on that side was considerably dilated and failed to react to light or with accommodation. The right pupil was of medium size, and reacted normally.

On testing the movements of the eyes, it was found that there was almost no power in the left internal, superior and inferior recti muscles. The fundus was normal. There was no marked tenderness on pressure over the left supra-orbital foramen. There was no disturbance of sensation of the face nor paralysis of the facial muscles. The tongue was clean, and protruded in the median line. The knee-jerks were normal.

The patient was given iodide of potassium in rapidly increasing doses, but for the first few nights morphia was required before sleep could be obtained. After a week of treatment by iodide, the headache had disappeared, but it was six weeks before the ptosis was overcome, and then there was still dilatation and rigidity of the pupil and paresis of the affected muscles.

CII.

Progressive Difficulty in Talking and Swallowing; eventually Some Involvement of Limbs.

A business man of sixty-six, with an excellent record of health and habits and a good family history, complained that for the past two months — as the result of a severe cold, he thought — he had had a difficulty in talking, and to some degree in swallowing liquids. The saliva had also collected in his mouth of late. Before the onset of these symptoms he had been perfectly well, he said; but he was a man of cheerful temper, and inclined to make light of his troubles, and his son testified that he had noticed some disturbance of both speech and hearing for six months back.

Now, the voice has become monotonous and nasal in quality, the enunciation of some sounds is very imperfect, and an occasional syllable or short word is slurred (as "once a while" for "once in a while"). When he gets laughing or tries to talk rapidly he often has a fit of strangling and choking.

The tongue was found unnaturally smooth, flabby, moist, and lacking in freedom of motion, and fibrillary tremors played over it.

At the first examination the wrist-jerks and knee-jerks were not abnormal; but a few months later the knee-jerks were +, and the right wrist-jerk was greater than the left. As the case progressed, the hands and feet became "numb" and weak, the speech less and less distinct, and finally unintelligible. Choking at table became alarmingly frequent and serious, and he died in about nine months.

Intelligence, hopefulness, and cheerfulness were preserved to the last.

It should be said that the radial arteries were tortuous and atheromatous, but that the heart and kidneys were essentially healthy.

CIII.

Difficulty in Speech and Swallowing, and to Some Extent in the Use of the Extremities; Congenital.

This patient was a young woman of twenty, and the appearance that she presented when first seen was a very striking one. It was evident, at the first glance, that there was something wrong with her face; although, beyond the fact that she had an unusually high color and a rather eager look about the eyes, and that her mouth was held partly open even when she was at rest, nothing especially remarkable was to be seen. The moment she began to speak, however, the trouble declared itself. She was practically talking without the use of her tongue, and with an imperfect use of the lips, so that there were some sounds

which it was impossible to distinguish except by guess. Her mother said that she was born with this defect, and that until she was ten years old it was with difficulty that she could be understood at all, so that her school life had been largely ruined. When she was an infant, attempts at swallowing would sometimes almost strangle her, so that her mother would take her to the window for the reviving effect of the air. Furthermore, until she was seven or eight years old the saliva used to run out of the mouth, so that her clothes were constantly wet to the waist. Even now there is a great deal of difficulty in masticating and swallowing her food, and liquids sometimes come back through the nose, although, so far as can be judged of by the finger, the masseter and temporal muscles contract pretty firmly, the left not quite so well, however, as the right. She cannot purse her lips for whistling; and as for the tongue, although she can put it out in a straight line fairly well for a moderate distance, she cannot move it either up and down or sidewise in the least degree. The palate moves but slightly with phonation. When she tries to speak, she makes so strong an effort that the accessory muscles of the neck come in play, especially the platysma.

Her difficulties are not confined to the muscles of speech and swallowing. Both hands are weak; and, when she tries to straighten the fingers, they remain somewhat crooked, especially the two smaller ones. This is much more true of the left hand than of the right. So, too, the motions of the left leg are not quite so free as those of the right; and her left foot is apt to turn in walking. The knee-jerks are both very slight, and the left is greater than the right. The sensibility of the skin is everywhere perfect. When asked about her eyes, she said that use of them made them ache, and that the lower lid of the right eye twitched a great deal. Otherwise they were normal.

An electrical examination showed that the muscles most involved reacted less vigorously to local stimulation, whether

with galvanism or faradism, than those which were better preserved, but there was nowhere any sign of degenerative reaction.

An electrical treatment was instituted for the stimulation of the nerves of the muscles of the tongue and lips, and with this exercises in speech were given; but she made no further progress than such as might be attributed to encouragement and increased effort.

There had never been a case just like this in the patient's family; but her mother was neuropathic in temperament, and, out of four brothers, three died young with acute diseases. The father and one brother and some members of the father's family had died of tuberculosis, and one sister had had epilepsy.

CIV.

Attacks of Weakness of All the Muscles of the Body, ending fatally.

[Case Reported by Dr. W. E. Paul.]

A woman twenty-three years old had been subject to spells of faintness, occurring in the morning, during which she felt as if she must lie down and sleep, but she never lost consciousness in them.

These attacks began when she was sixteen, and prevented her from going to school. They never troubled her after her marriage, which took place when she was twenty. A year and a half from the time she was married she gave birth to a healthy child. The labor was normal, and the puerperium uneventful. The child was not nursed by its mother.

Eight months before presenting herself at the hospital, and eighteen months after her confinement, while taking the part of a Japanese girl in private theatricals, she stooped low, in a line with a number of other performers. At a given cue all the line were to resume the standing attitude; but the patient

could not rise, and asked for help. She was ridiculed a bit, and then assisted to stand. In the final performance she received assistance from her comrades on either side, and suffered no further disability. Next, ascending stairs became difficult. In boarding a car, she could not lift her feet without assistance. If merely helped in the usual way by taking her hand or arm, she would be pulled forward and fall on her face. This loss of muscular power was of brief duration. Crossing the knees at times required assistance. She could usually walk on a level, but stepping up was frequently difficult. In spite of her symptoms she attended to her housekeeping and cared for her baby.

Examination (eight months after the first symptoms).—The patient was of medium size and well nourished; calm and rather indifferent in manner. Her color was good, but the blood was not investigated. No marked weakness of voluntary muscles appeared at the time of examination. The gait was normal. She could raise either foot to a chair seat, but required some slight assistance to mount the chair. The grasp and various movements of the fingers and arms were made easily, with apparent normal strength. She talked, swallowed water, and used her ocular and facial muscles with no sign of paresis. Objectively, no change in sensibility to touch or pain could be discovered. No tenderness existed over the muscles or nerves. Vision and hearing were undisturbed, and the fundus was normal. The visual field was not limited, and there was no diplopia. Romberg's symptom was absent. The knee-jerks were both normal. No attempt was made to tire this reflex. The pupils were equal, and reacted to light and accommodation. The urine had a sp. gr. of 1.014, and showed a trace of albumen.

Transient weakness in the arms next appeared. At times they would drop like lead, without sensory disturbance. Her husband had to support them when she arranged her hair. To insert a hat pin, she rested the elbows on the mantel. In playing the piano, both hands tired easily. She would some-

times have to drag the baby to her lap rather than lift him clear. Once, when attempting to take him from his crib, it was impossible to straighten up until assisted. She refrained from handling fragile objects. There was difficulty at times in buttoning, and ability to do millinery and embroidery was lessened. The attacks of weakness became more frequent. These symptoms were of short duration, and came on usually after severe use of those muscles in which weakness or complete loss of power developed. She not infrequently fell backwards on the stairs; and on one occasion, when near the top, the legs gave way, and she fell with the baby in her arms, sliding down several steps without injury. Transient diplopia occurred in the course of the disease, and it was noticed at times that, when she looked up, the head was thrown back indicating ptosis. The muscles of mastication escaped. There was lack of expression in the face, and the laugh seemed incomplete. The voice at times was nasal and somewhat indistinct, though not lowered. Words were correctly chosen, and speech was never really lost. One day the words ran together and the lips seemed powerless, but holding the upper lip with the fingers obviated her difficulty. Swallowing was sometimes awkward, and in the later stages this difficulty became serious. The neck muscles sometimes suddenly gave way, so that the head required support.

The symptoms became more frequent, and involved on several occasions very nearly all of the voluntary muscular system. One evening six months before death, after climbing the stairs safely, she fell to the floor unable to move or speak, but finally succeeded in attracting attention by tapping the floor with her heel. Later, in attempting one day to step up on the piazza, she fell in a heap, and had to be carried bodily into the house. In a third instance, five weeks before death, she fell helpless at the top of the stairs. After a few moments she regained control of her muscles in each instance. Some drowsiness followed the last attack, but no unconsciousness.

The most serious symptom to develop was choking, the first attack occurring about six months before death. At the commencement of a meal, the first attempt to swallow water caused strangulation. She became cyanosed and unconscious, but revived at the end of about thirty minutes. A month later, after taking two swallows of water without trouble, the third choked her. Cyanosis and unconscicusness followed, and tracheotomy was seriously considered. Such attacks and the accompanying apprehension impaired nutrition materially, but there was no local atrophy. Her mind remained clear. Palpitation and dyspnœa occurred, but were not prominent symptoms.

There was no numbness nor prickling. Appetite and digestion were good. The disposition was unaltered. The catamenia reappeared after confinement, and did not modify the symptoms. The sphincters were unaffected. There was no spasmodic movement, stiffness, nor tenderness. Emotional excitement aggravated the disturbance.

During the last few months of life the attacks of weakness became more frequent and profound; yet, when seen in the intervals, she gave no impression of serious illness. The bulbar symptoms became more pronounced, and at one time rectal feeding was practised; but the ability to swallow food and liquids returned while at the Boston City Hospital, some months before death. Toward the end she was sometimes unable to roll over or to sit up in bed, showing involvement of trunk muscles.

The ocular symptoms also increased, but there were remissions with apparent normal muscular balance. Exposure to cold did not aggravate the condition, as a rule; but once, on leaving the cars after a journey, she became helpless on encountering the chill of a March air. Three days before death she was able to try on a dress, and two days before death she sat in a chair and swallowed without trouble. At this time she complained of palpitation, and of a sharp pain in the right iliac region. The lungs filled up, but became

clear again after several hours There was no temporary inability to spit out or swallow the secretions. Death occurred eighteen months after the first symptoms.

Autopsy revealed macroscopically nothing pathological in the nervous system or the musculature.

CV.

Sudden Attack of Severe Dizziness with Pain in the Face and Tongue; Facial Palsy, and Paralysis of Certain Eye Muscles.

The patient was a lady of fifty, with good health up to the time of onset of the present illness, which occurred as follows: While she was bathing herself, after rising in the morning, she suddenly felt an intense pain of stinging character, at the left edge of the tongue near the tip, and likewise in the face near the angle of the mouth. At the same time she felt herself intensely dizzy and nauseated. Surrounding objects seemed to reel about, and it was with difficulty that she could get to the door and call for help, severe vomiting attending this effort. Consciousness was not disturbed. The pain soon spread to the left ear and left side of the head, then over the whole forehead and eyes; and this pain remained all day. Vomiting also occurred at intervals through the day, and likewise dizziness, the latter being increased by any motion of the head or by turning in bed. She had double vision, and all the objects in the room looked unnatural, so that she was obliged to keep her eyes covered.

On examination it was found that she had complete paralysis of the lower facial muscles and incomplete paralysis of the forehead and eyelids on the left side. Neither eye could be completely opened. The motions of the eyeballs were incomplete, especially those of the left side, and this defect particularly concerned the movements of abduction of the left eye, so that she had a slight strabismus.

The left pupil was smaller than the right, and did not respond either to light or with accommodation. The lower jaw was displaced about one-quarter of an inch to the left side, and swallowing was defective. The sensibility of the left side of the face was impaired. When she attempted to walk she staggered badly, generally toward the left, though there was no impairment of motion or disturbance of sensibility of either the arms or legs.

As time went on, she improved very slowly in some respects; but by the end of a week or ten days faradic irritability of the left facial nerve was found to be lost, while degenerative reactions were present to galvanic excitation, the positive pole exciting stronger contractions than the negative. This "reaction of degeneration" was more marked for the lower facial muscles than for the upper. Examination of the heart and urine revealed nothing abnormal.

The patient lived for thirteen years after this attack, and was in fairly good health, though she always retained slight traces of the conditions above described. She was a person of somewhat nervous temperament, but free from any well-marked stigmata of disease.

CVI.

Intense Headache; Increasing Stupor; Irregular Convulsive Movements of All Extremities, of Slight Degree: Death.

A man somewhat past middle age, but considered to be in excellent health, a teacher by profession, came home one day after a fatiguing mental effort, complaining of intense, diffuse headache. He sat with his head resting on his hands for a time, and then went to bed, but soon became dull and finally unconscious. He still moved about rather restlessly in bed, and twitching movements were visible in both hands and arms, but of slight amount. It was considered probable, on account of the headache and the gradual increasing stupor without localizing symptoms, that he was

suffering from meningeal hemorrhage, although no sufficient cause for this could be discovered.

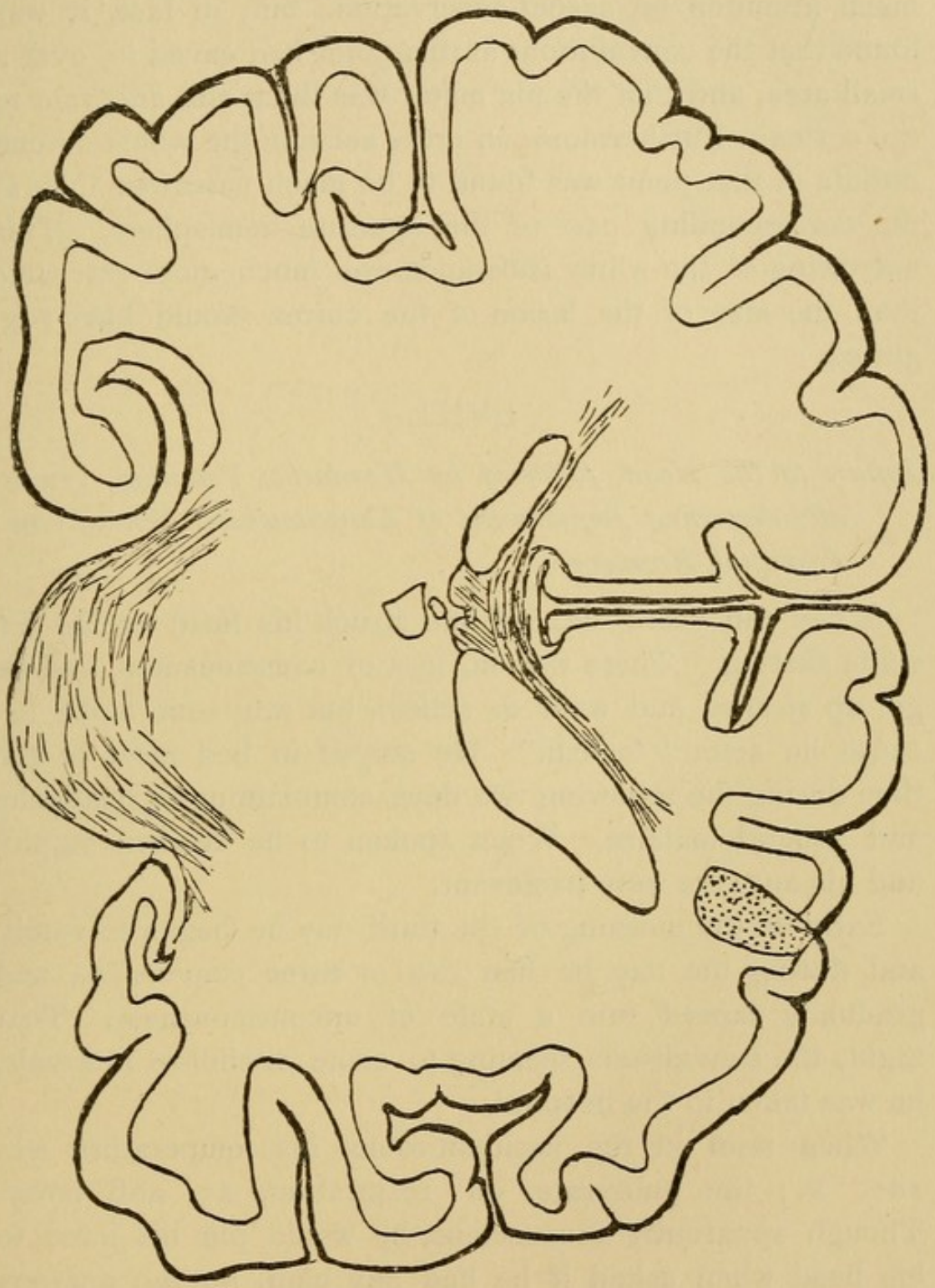
An operation was accordingly advised, and it was decided to trephine on the left side, inasmuch as the greatest amount of convulsive movement and paralysis seemed to be on the right, although, in fact, there was no very great difference between the two sides in this respect. At the operation nothing was discovered except that the convolutions were flat and rather dry on the surface. The patient died on the following day, and examination showed that the hemorrhage was on the opposite side, where it covered the entire hemisphere.

CVII.

Convulsions of the Right Arm and Leg and Right Side of the Face, leading to Hemiplegia, with Involvement of the Arm much more than the Leg.

A lady of forty, who proved to have diabetes, from which she died five or six years later, was attacked with clonic convulsion of the left hand and left side of the face, and to a slight extent, of the left leg. This lasted for ten or fifteen minutes, and then disappeared for a time, to return later. After it was over, the speech was found imperfect, and the motions of the left hand and arm were very much impaired, though not wholly lost. The motions of the leg were but slightly affected. The leg soon began to improve, but she never regained the finer motions of the fingers. She could walk fairly well, though not without awkwardness of the left leg. The speech disorder soon passed away. For a time she remained subject to recurrences of slight convulsions of the hands, not attended by unconsciousness; but for a number of years before her death she had no recurrences.

The history of the case in other respects may be passed over, but it is important to know that at the autopsy a lesion was found in the anterior transverse convolution, about midway between the fissure of Sylvius and the longitudinal



CASE CVII.

fissure, which might be described as a slight degree of porencephalus. The change was not so great as to attract much attention on casual observation; but, in fact, it was found that the convolutions at this point had caved in, over a small area, and that the pia mater was thick and adherent to the cortex. Furthermore, on cross section the whole corona radiata at that point was found to be much narrower than at the corresponding part of the opposite hemisphere. This narrowing of the white substance was much more extensive than the size of the lesion of the cortex would have suggested.

CVIII.

Injury to the Head, followed by Headache, Vomiting, gradually deepening Impairment of Consciousness, Convulsions: Eventual Recovery.

A boy, ten years old, fell and struck his head on the ice while skating. There was no loss of consciousness, and he got up at once and went to school, but was sent home because he acted "foolish." He stayed in bed most of the time during the following two days, complaining of headache and general malaise. When spoken to he seemed stupid, and his answers were irrelevant.

Early on the morning of the third day he began to vomit, and during the day he had two or three convulsions, and gradually lapsed into a state of unconsciousness. That night, the convulsions seeming to come at shorter intervals, he was taken to the hospital.

When seen in the accident-room, his temperature was 101° F.; the pulse-rate, 98; respiration, 25, and noisy. Though apparently unconscious, he would put his hand to his head when asked if he had any pain, but no answers could be elicited by questioning. There was no evidence of external injury of the head. There was conjugate deviation of the eyes toward the left. The pupils were equal, though widely dilated, and reacted slightly to light. No paralysis

of the extremities could be made out. The deep and superficial reflexes were lively, and the Babinski phenomenon was present on both sides.

During the subsequent twelve hours the convulsions came with more or less regularity, every half-hour, sometimes starting in the face, sometimes in the left arm or leg, and quickly becoming general. Each attack lasted three to four minutes. The attacks always terminated in his opening the jaws widely and snapping them together, a number of times. During the latter part of the fourth day the intervals between the attacks began to lengthen, and the convulsions became shorter, at times only involving the face and neck. On the fifth day the convulsions ceased; and he would answer questions rationally, but in the manner of one talking in his sleep. There were no more convulsive attacks during his convalescence; and he woke up on the morning of the sixth day in apparently clear mental condition. He had no recollections of the events which had occurred since his accident, the last thing he could remember being that he was skating. The subsequent convalescence was uneventful.

CIX.

Hemiplegia of Unusual Form and Onset.

An unmarried lady, seventy-three years old, had a mild attack of "grippe" with slight bronchitis, and pleurisy with effusion, about the middle of January. Two weeks later, while sitting up in bed and taking her breakfast, she suddenly felt a numbness and helplessness of the left hand and arm, so great that she could scarcely raise her arm from the table. There was no affection of consciousness, nor any weakness of the leg or face, but there was a distinct sensory as well as motor affection of the hand, so that, while it lasted, she could not tell what she held in her fingers. After a brief time this condition passed away, or nearly so; but about a fortnight later, while she was taking her supper, she seemed

suddenly to doze off, and did not respond to questions. The muscles of the jaw and left arm became rigid. For a few moments her breathing seemed to be checked, but presently it came back with a gasp. When she came to herself, she was much excited, but had no knowledge of what had happened. It was, however, found that the movements of the left arm and hand were highly ataxic, the speech thick, and the left leg very weak. The sense of position of the left arm was so much affected that she could not tell, without looking, whether her hand was on the table or under it, nor could she use it for feeding herself or holding objects, though there was but little actual paralysis of motion. The sensibility of the skin as regards temperature and pain was greatly impaired, so that at one time she burned herself without knowing it.

The hand also felt numb and prickly, but was not so painful as the foot, where she suffered greatly from a sense of cold and aching, and later from burning and stinging, as if from the bite of a venomous insect. All the motions of the leg and foot were possible, yet, when she tried to use the leg, it would give way at the knee. Her speech was not really aphasic, and the slight awkwardness in enunciation soon passed away. Her memory became slightly impaired, and has not been fully recovered.

At the time of my examination all movements of the left hand were possible, though feeble and imperfect; but the fingers were extended at the phalangeal joints, and any attempt to flex them caused pain. Passive movements at the shoulder also caused pain, and all the joints of the left hand and arm were tender on deep pressure. The sensibility of the skin and the sense of position of the fingers were still somewhat impaired, though much less so, she said, than at first. All movements of the left foot were also possible; but the foot, ankle, and leg were swelled, hot, and tender. Here also there was moderate impairment of sensibility of all modes. The knee-jerks were but little altered, though it

was said that they had been increased. The Babinski reflex could not be obtained in a typical form. Hemianopsia was not present. The patient talked clearly and intelligently. On examination of the heart a systolic murmur was heard at the left edge of the sternum, and the attending physician said that at times a well-marked systolic murmur had been heard at the apex. The beat of the heart was very irregular.

CX.

Wide-spread Paralysis with Unconsciousness, following an Acute Infectious Disease. Partial Recovery; Mental Deterioration.

A healthy boy, thirteen years old, of neuropathic family, passed through a moderate attack of mumps, in November, 1895. Ten days later he woke up feeling poorly and with convergent strabismus of the right eye. The next morning he had a partial ptosis of both eyelids, and slight deafness. He also complained of intense pain in the forehead, and became very dull and drowsy. The temperature was not taken at first, but two days later it was found to be 100° F. During the next week all the symptoms grew worse, and slight delirium came on. All four limbs became weak and numb. The temperature did not range very high, but there was continuous slight fever. When examined by me, a few days after the onset of the illness, there was almost complete deafness, bi-lateral ptosis, bi-lateral facial paresis, double optic neuritis, paralysis of the external eye muscles, and irridoplegia with myosis. Consciousness was greatly impaired, and the knee-jerks and wrist-jerks were absent on both sides. In spite of these serious symptoms he began to improve after a few days, and finally recovered substantially, but retained traces of optic neuritis, strabismus, impaired vision, and impaired hearing for a number of months, and became subject, in addition, to epileptiform seizures. Six months later these disorders had nearly disappeared; but his

character was found to have become altered, so that he was unreliable and mischievous, and from this tendency he has never recovered. After many futile attempts to set him up in business, he was pronounced incurable and sent to an institution.

CXI.

Temporary Paralysis of Arms and Legs, of Acute Onset, with Disturbance of Sensibility. Improvement, followed by Headache and Convulsion. Recovery.

A middle-aged man, of good previous health and good habits, was exposed on two successive days, during November, in a rain-storm. The next day he found the right foot and leg weak, and shortly afterward the left; and this weakness increased so rapidly that at the end of a few hours he was scarcely able to get upstairs. The left foot felt slightly numb, and later became the seat of burning sensations. The next day he was worse, and the hands and arms had become more or less involved in the same manner. The pain and soreness was increased by deep pressure of the forearms and calves, that in the arms being most severe along the ulnar border. There was no burning sensation in the hands as there had been in the feet, but only lack of strength. When he tried to wind the clock, the fingers refused to hold the key. Micturition was normal, but increased in frequency. He never became so weak that he was unable to walk; but this cost him a great effort, and he sometimes fell heavily to the ground when his knees became bent a little out of the perpendicular. After about a week he began to improve slowly, the sense of burning heat being the first symptom to pass away. Up to this time there had been no disturbance of the cranial nerve systems and no affection of breathing nor swallowing. After the improvement had progressed to a certain point, however, he began to have headache, which seemed to have been first excited by one of his falls. The pain began in the back of the head, but was felt eventually

in various parts, and continued in greater or less intensity for several weeks. Finally, one day, just a month after the onset of the first symptom, and while still suffering from the headache, he had a sudden attack of prickly sensation in the right leg and immediately afterward in the right arm, from the knee to the foot and from the elbow to the hand respectively. This passed away in half an hour, but the next day he had a severe convulsion which lasted two hours. He was seen by me two days after this, and was found to have a rectal temperature of 101°, and very severe headache. The tenderness of the limbs was no longer present. Ophthalmoscopic examination showed no distinct neuritis, but an appearance as if of a slight, diffuse œdema of the retina.

A letter received from the patient six weeks later reported that he had improved, but was still weak and was unable to walk much, and that he was suffering from double vision. The calves of the legs still felt sore at times. By the end of another year he had substantially recovered.

CXII.

Acute, Severe Headache in a Young Person, followed by Unconsciousness without Further Symptoms, and ending fatally.

A young married lady, who was of an excitable nervous temperament, although intelligent and self-controlled, and who had been a great sufferer from severe headaches, was attacked with intense pain in the head on the second day after the birth of her first child. There was a moderate rise of temperature, but no other bad symptoms, either local or general; and the attack was at first thought to be of the familiar kind. Gradually, however, in the course of twenty-four hours, although the headache somewhat abated, she passed into a condition in which she lay quite still, not appearing to suffer pain, but taking no notice of what went on around her. At first she could be aroused in a measure by

questions; and, when this was no longer the case, a sharp pricking would make her frown and raise her hand as if the pain was felt somewhat, after which she would at once relapse again into the same condition as before. Respiration was not stertorous, nor apparently altered in any way. There was not much change noticed in the appearance of the face. The pupils varied in size, sometimes growing larger, sometimes smaller, without much regard to the strength of the light. The question arose as to whether her condition was one of hysterial stupor or of some more serious trouble. The former conclusion was favored at first; but, in fact, a general convulsion came on the next day but one, immediately after which she died. The diagnosis and *post-mortem* findings will be brought out in the discussion of the case.

CXIII.

Headache; Pallor, without Discoverable Changes in the Blood.

Imagine yourself called to see a young married woman of twenty-eight, complaining of general exhaustion and inability to concentrate her thoughts, and of constant headaches, frontal and occipital. You notice that she looks very white, but find on examination that the hæmoglobin is present to the amount of 90 per cent. and that the red globules number fully five million. You talk with her, and get the following history.

She was always of excitable, "high-strung" temperament, but used to consider herself pretty well. During her childhood her domestic conditions were very unhappy, so that while at home she was under a constant strain. Her conditions in this respect were improved by a happy marriage when she was about twenty years old. But her new responsibilities brought new fatigue. Even as a child, she used to have a great deal of headache; and for many years she has scarcely been free from it. Now the pains are quite intense at times, and keep her awake at night.

At other times she drops to sleep, in spite of the pain, though she generally wakes tired and uncomfortable. There is no disorder of the menstrual functions nor any uterine displacement.

On examination of the eyes slight errors of refraction were found, of which astigmatism was one; but prolonged treatment with glasses proved of little benefit.

The nose was next examined; and a hypertrophy of the middle turbinate was discovered, which, it was thought, might cause obstruction of the ducts leading from the ethmoid sinus. (This thickening was due to a peculiar porosity of the turbinate bones associated with enlargement and swelling.) The turbinate was removed under ether, and for a time, after the soreness had passed away, she seemed to be a little better; but, again, the improvement was not permanent.

In spite of the condition of the blood as shown by tests, a prolonged course of iron was advised. Strychnia in large and increasing doses was also given, and at the same time a thorough, tonic water-treatment was instituted and static electricity was used for a long period. Under this and similar tonic measures there was a gradual improvement in the course of a year, though the headache by no means ceased.

CXIV.

Headache.

A gentleman of fifty-five was seized with an intense frontal headache, so that he called a physician near by in the middle of the night, who relieved him with a little morphine. This headache was not a new thing with him, for he had suffered from it for a dozen years, though it had never been so severe as now. He was a delicate man, a clergyman by profession, and a hard worker, and had great responsibilities in a large parish. The physician went away, but returned early in the morning and found him still suffering greatly, but exhibiting no other symptoms, and showing no evidence of fever.

While he was sitting by his side, the patient's head and eyes suddenly turned strongly to the left, the muscles of the whole body became rigid and tremulous, and consciousness was completely lost. This condition lasted for perhaps two minutes, at the end of which time the patient greatly recovered himself, and showed no memory of what had passed. It became obviously important to discover the cause of this dizziness, and to learn whether it was related to the severe headache of the previous night or to the long standing tendency to pain in the head. It was learned that the eyes had been repeatedly and carefully examined for errors of refraction, but another examination was made with a view to ascertain whether optic neuritis was present. Nothing, however, was discovered. The urine was next examined, and this examination was repeated frequently through the course of the next few days, but, beyond the discovery of minute traces of albumen and a few hyaline and finely granular casts, nothing abnormal was found. He had had more or less nasal catarrh for a long time; but this was not especially troublesome, and there was no evidence of any permanent obstruction.

Physical examination as regards abdominal and thoracic organs was wholly negative, and the reflexes were normal.

Applications of cold to the head, prolonged tepid baths, laxatives, complete rest, and other measures were instituted, with only temporary relief. The second examination of the eyes showed only that one border of the right disk was distinctly hazy. The subsequent history will be given in the course of the discussion.

CXV.

Very Gradual Loss of Consciousness, with Pain in the Head, following a Slight Injury. Eventual Recovery.

A gentleman of seventy, of strong will, though naturally of delicate health, had a slight fall from his carriage on account of the breaking of an axle. He struck his head a

moderate blow; and this was followed by a slight and persistent headache, which very gradually increased in the course of the next week. At first it did not incapacitate him for talking and enjoying himself, however, though, as a matter of prudence, he stayed in bed. Gradually he began to grow duller, and by the end of the week he had become apathetic and stupid almost to complete unconsciousness, so that his discharges were passed involuntarily in bed. There was no restlessness, no fever, no delirium. He simply lay there motionless, looking very pale, and scarcely to be roused. After this condition had continued for some days, improvement gradually set in. This was even more gradual than the onset; but by the end of a month he was almost completely restored to health, though somewhat weak and languid for a good while longer.

CXVI.

Headache.

In April, 1895, an intelligent law student of twenty-five came for relief on account of extremely annoying frontal headache. He was an intelligent man, but looked worn and depressed, though entirely free from distinct morbid ideas. This headache had already pursued him for two years, coming on more or less every day, and it continued to trouble him for several years after the first examination. Study or mental activity made it worse, and a trip into the country made it temporarily better. Besides this, his head felt confused and dull, and every task was an effort to him, even those which he enjoyed. He was not subject to nasal catarrh; and, although he had certain errors of refraction, including astigmatism, these had been corrected so far as possible by several oculists, but without securing him the least relief.

The personal history and family history were of some interest. He had been subject, in his youth, to "sick

headaches"; and both his parents and his brothers had shown the same tendency. He was not a good sleeper, and suffered from unpleasant dreams. Occasionally he would have three or four emissions on successive nights, and then none for a long time, but he did not think his head was worse for these. As a boy, he was "sensitive" in disposition, and worried about trifles, and, although he had grown more philosophical, yet the same general tendency persisted.

Examination of the heart showed nothing abnormal, and the pulse was not tense. The knee-jerks were exaggerated. Various measures were devised, tending to improve the general vigor, and with some success; but the headache persisted, and it became a question whether he should keep on with his study of the law or take up some less exacting occupation. Finally, he was advised to disregard the headache altogether, and to act just as if he did not have it, except for taking reasonable precaution in regard to his general health. This treatment was followed eventually by marked improvement, so that he has been able to carry on active business and has enjoyed increasing vigor.

CXVII.

Persistent Occipital Headache.

A tall, slender girl, twenty-eight years old, and delicate in appearance, had been left in straightened circumstances, and obliged to work for her living. During the past five years her mother, sister, and two brothers have all died of pulmonary tuberculosis.

She has always had more or less occipital headache, but during the past five years it has been much more constant and severe. For several months it has troubled her so much that she has spent all her money in trying to get relief, having been to four eye specialists and tried several varieties of glasses. She has been unable to work for two

months; and her friends say that her expression is much changed, and that she looks as if she wanted to cry out with the pain all the time.

The headache is never accompanied with disturbance of vision, and there is no vomiting. It never keeps her awake.

The patient says that she did not begin to menstruate until she was eighteen, and that for the past two years the catamenia are always accompanied by diarrhœa with eight or ten watery movements a day. This diarrhœa lasts four or five days, and is followed by a spell of obstinate constipation.

After a systematic course of treatment of a wholly different sort, the old occipital headaches disappeared, though there is still slight frontal headache during the period of menstruation.

CXVIII.

Injury with Unconsciousness; Improvement, then Relapse; Fever and Muscular Rigidity: Death.

A middle-aged man was brought to the hospital partially unconscious, and with the history that he had a violent fall several hours before.

On examination, a scalp wound was found on the back of the head and a contusion of the left frontal region. No fracture could be made out. There were signs of slight bleeding at the nose. The pupils were normal, but a slight degree of external strabismus was present. The pulse was 60, and the temperature 100° F.

The next day the patient was conscious, but was somewhat dull and not rational. The dejections and micturition occurred involuntarily. During the first week the mental condition improved steadily, but after that no further improvement took place, and the patient remained for weeks longer dull and slow in mind, with uncertain memory and not quite clear as to his surroundings.

At the end of the first week a painful stiffness of the neck came on with retraction of the head; and the temperature, pulse, and respiration rose notably (130°, 103.5, and 30, respectively).

On the twelfth day the left leg and thigh became tender to pressure; and after that the pain and stiffness of the neck increased, and respiration grew more and more labored and finally purely diaphragmatic, and the pulse and temperature increased. On the seventeenth day the patient died, the temperature, pulse, and respiration having risen rapidly toward the last to 105° F., 190, and 70, respectively.

An account of the *post-mortem* examination will be given in connection with the discussion of the case.

CXIX.

Convulsions of the Left Side, recurring regularly in an Elderly Patient recovering from Influenza, and resulting in Hemiplegia.

A lady of seventy had a typical attack of the "grippe" during the severe epidemic of 1892. While she was convalescent, and at the moment actually sitting up in her chair knitting, her left arm began to twitch with regular clonic movements of flexion and extension. These movements soon ceased, but in twenty minutes they returned again; and this time the leg also was involved to some degree. At the end of another twenty minutes a third attack came on, in which the face was affected as well. Consciousness was not lost on either occasion. In this fashion it went on through the day, attacks of the sort described returning and then passing away. After a time, however, recovery was not complete; and finally a condition of paralysis of the entire left side developed, and the following day she sank away and died. At the autopsy the brain was found extremely œdematous and very pale. A minute examination of all parts failed, however, to reveal any lesion. At the

microscopic examination venous or capillary stasis was discovered here and there, but no sign of inflammatory changes or special lesions of any kind.

CXX.

Attacks, at Different Periods, of Transient Hemiplegia with Aphasia; Paraplegia with Crossed Paralysis of Sensation, Motion, etc. Improvement under Treatment.

In October, 1883, I was called to see a gentleman thirty-five years old, unmarried, on account of rapidly increasing loss of power in the legs, especially in the left. I found him in his chair and unable to rise. The right leg was, to be sure, freely movable at all the joints, and showed fair strength; but the left was almost wholly paralyzed. He could not move the foot and toes at all, but could flex the leg very slightly at the knee and could make a few movements at the hip. On attempts to extend the left leg at the knee a strong extensor spasm occurred, while under other circumstances flexor spasms came on. Examination of the sensibility showed a marked diminution of the sensitiveness to touch and pricking over the entire right leg and thigh, but a hyperæsthesia over the left leg and the lower part of the abdomen. He complained also of a disagreeable sense of burning all over the trunk, especially on the left side. This was most marked at the level of the nipple, and was so great that he could not bear to be touched, and could not lie on his left side. The sphincters were not wholly under the patient's control. The knee-jerks were exaggerated on both sides, especially on the left; and ankle-clonus was present in corresponding degree.

I learned on inquiry that, five months previously, on waking in the morning, he had been unable to walk straight or to control properly the movements of his left hand. He was also unable to articulate distinctly, so that it was with difficulty that he made himself understood. He rapidly im-

proved, however, in all these respects, and by afternoon was entirely well, except that the left hand felt a little awkward. Three months later, after having felt poorly for two weeks, he was suddenly attacked with severe pain in the abdomen, with nausea and vomiting, then with very severe pain up and down the back. This pain was supposed to be rheumatic, and was attributed to exposure to wet on his sail-boat. A few days later he began to lose strength in the left leg; and the symptoms above noted came on, with, at first, retention of the urine.

Under appropriate treatment the patient gradually improved, so that he can now walk about slowly, though the motions of the left leg have never become normal. Three years later, after having felt poorly for a time, he became confused, aphasic, and drowsy. The right side of the face became slightly paralyzed, but the right hand and leg were not affected. The mental dulness amounted almost to a stupor. After about a week, however, he began to improve, under treatment, though he remained for some time confused and indifferent to passing events, and was troubled with visual hallucinations or illusions.

On another occasion he had a brief attack of momentary unconsciousness, attended by strabismus. In spite of these severe attacks the patient finally improved still further; and, except for the paralysis of the left leg and a certain amount of loss of sensibility of the right leg, and a slight impairment of the control over the sphincters, he has remained well. Two years ago he was attacked with cystitis due, apparently, to a vesical calculus; and from this he has never wholly recovered.

CXXI.

Complete Paralysis of Acute Onset, with Universal Rigidity.

A gentleman of seventy-five was heard to fall heavily to the floor in his study. When his friends reached him, he was unconscious and breathing heavily. He soon became

stertorous, the face covered with perspiration, and all the extremities rigid and tremulous. From time to time a spasm ran through all the muscles of the body, causing an increase of rigidity of the trunk and limbs. Most of the time the arms were rotated strongly inward and the hands clenched. He did not recover consciousness, and died in a few hours.

A *post-mortem* examination showed a flattening of the cerebral convolutions, obviously due to the pressure from an enormous hemorrhage into the interior of the brain, which had destroyed a good portion of the left hemisphere and part of the right. The basal ganglia were also partly destroyed, and the ventricles were filled with blood.

CXXII.

Convulsive Seizures; Attacks of Unconsciousness with Automatic Movements.

A girl twenty-nine years old had been subject to attacks of convulsions ever since she was nine. She always knew when one of these attacks was coming on; for they were preceeded by a sense of numbness in both hands, which gradually extended up her arms till it reached nearly to the elbows, when consciousness was lost. Sometimes she had time to sit down before she lost consciousness, but more often she fell to the floor.

Her mother said the fall was always followed by a marked cyanosis and a general rigidity of all the limbs, and this by convulsive movements of the face and the extremities, during which there was frothing at the mouth, the froth at times being bloody from bleeding of the tongue, which was not infrequently bitten. These seizures came more often in the day-time than at night. Each one lasted two or three minutes, and was followed by sleep.

The frequency of the attacks has decreased lately, so that, whereas they formerly came every three or four weeks, they now come at more or less regular intervals of two to

three months, as a rule occurring at the time of menstruation.

Although the attacks are less numerous under treatment, a new and rather distressing feature has made its appearance during the past few years. This consists of "spells" of the following nature, which come over her without any warning, every few weeks: —

While talking or sitting quietly, her face becomes suddenly blanched and her eyes open widely, and stare fixedly into space. This lasts but a moment, and she then begins to undress herself. It is not difficult to stop her from this proceeding, for she can be aroused from her condition of semi-consciousness; but, when allowed to go on as she likes, she takes off her clothes, lies down and goes to sleep.

These attacks do not seem to be affected by treatment.

CXXIII.

Attacks of Temporary Alteration of Consciousness, recurring repeatedly in the Same Form.

A middle-aged man has been subject for four years to spells occurring at night, at the onset of which his wife is awakened by his making a clucking noise in his throat. On going to him, she finds him with his eyes rolled up and his face pale, looking as if he were in a "dead faint," and is unable to arouse him. He remains in this condition for five or ten minutes, and then goes into a deep sleep for two to three hours, from which he cannot be awakened. On recovery from these attacks he gives an account of his sensations during the seizures in terms like the following: —

He suddenly finds himself, he says, in an unknown world, which he always recognizes as having been visited previously. His first impression in his new surroundings is one of pleasure at finding himself there again. He finds himself standing in a pathway which extends through beautiful tropical vegetation, more beautiful than any he has seen on

earth. The air is soft and balmy, and the gravel walk extends through the garden as far as the eye can reach; while from some distance ahead, and always from the right, comes wonderful music, now of great volume and now dying away to the sound of a single instrument, soft and sweet like a flute, but so marvellous that it seems as if it must be played by a dozen pairs of hands.

At his left there always stands a companion, unlike earthly beings, about five feet high. There are no features and no joints to his limbs, and his body seems covered with a grayish fuzz. The patient always starts at the same place, and walks down the gravel pathway, which crunches unpleasantly under his feet. His companion glides along noiselessly on his left, and he constantly exclaims to this being of the beauty of the clear sky and the surroundings. When he gets to a certain point in the walk and is approaching the source of the music, there is a sudden change in the scenery, and he finds himself in the doorway of a large room. In the foreground is an engine of enormous size, while in the background is magnificent machinery, which is simple in its construction, yet so wonderful in its mechanism that he always wishes he had paper and pencil, that he might make notes to show afterward to his friends. His peculiar companion is never with him in this engine-room. While in this state, he is always conscious that he is in a sort of a dream. He never tastes anything nor notices any fragrance or odors.

The attacks are always precisely the same. In the daytime these attacks will come while he is at work; and his friends say that he stands staring into space for two or three minutes, first making a clucking sound with his mouth. He will not answer when spoken to. There are never any convulsive movements during these attacks. He has two or three of them in a month, and then will go several months without any. For the past few months he has been unable to concentrate his thoughts upon anything, and is absent-minded and forgets many essential things about his work. For this reason he has been discharged from his position.

Several months after the above history was taken, the patient was found in the street one day, unconscious and in a convulsion.

CXXIV.

Attacks of Unconsciousness and Convulsions.

A girl, twenty years old, had lived all her life in rather unhappy surroundings, she being quick-tempered and excitable, while her father was more or less addicted to alcohol, and inclined to be brutal. A sister had died of eclampsia, and a brother had had epilepsy since childhood.

One day she was seized with a convulsion while at work in the factory where she was employed. This was followed by a deep sleep, so that she had to be taken home in an ambulance. During the following night she had two or three similar attacks, in one of which she bit her tongue so that it bled. When seen on the day after, she complained of severe frontal headache and abdominal pain. The abdomen was somewhat tender, though there was no muscular rigidity. The pupils were dilated, but responded promptly to light. The fundus was normal. The knee-jerks were lively and equal. Examination of the urine showed nothing abnormal. Although it was impossible to obtain any description of the attacks, she was put on moderately large doses of bromide.

A few nights after she had begun treatment she was walking on the street, when she suddenly felt dizzy and was overcome by a stifling sense of suffocation. She was, however, able to walk to the house of a friend several minutes distant; but, after reaching the door and ringing the bell, she fell down in a "fit." Her friend said there were convulsive movements for a few minutes, and that she was then unconscious for an hour and a half. Several days later she was found unconscious in the street and taken to the hospital, where she remained, with no recurrence of her trouble, for about a week. While in the hospital, she was very con-

tented, and, when told she was to be sent out, seemed much upset, and a few minutes after was heard to be coughing violently. On going to her bed, she was found unconscious, lying on her back, with her eyes open and staring. The pupils were widely dilated, but responded to a lighted match. Her body was in a state of tonic spasm, the arms extended at her side, the hands clenched and grasping the bed-clothes. The legs were straight, and the toes in marked plantar flexion. There was no visible respiration, and the face was cyanotic. Occasionally there would be a gasp followed by a short paroxysm of coughing, during which all the muscles relaxed and she would reach out and grasp the nurse's dress and pull at it violently (always staring fixedly straight ahead), and then relapse into a state of rigidity again. This condition lasted twenty minutes, at the end of which time she regained consciousness and began to cry. She was transferred to an institution better adapted for treatment of her condition, and recovered from the major attacks. Once or twice since then she has fallen unconscious, but has immediately recovered.

CXXV.

Epileptiform Seizures of Peculiar Character.

A single woman, fifty-one years old, had been subject since childhood to attacks in which she would fall without warning, and have convulsive movements for two or three minutes. On coming out, she would go into a deep sleep for two or three hours. For many years these attacks came on with more or less regularity every six or eight weeks. Besides this she has had no illness, except she was said to have some "kidney trouble" several years ago.

Six days before her entrance into the hospital she had a convulsion, apparently of the character of her usual attacks; but, contrary to former experience, this was followed by a similar seizure the following day. Then she felt all right

for two or three days, though her brother noticed more or less mental confusion. Three days ago she had a severe convulsion followed by delirium, which has persisted ever since.

Physical Examination.— The patient lies unconscious in bed, cyanotic, and with stertorous breathing. Her pupils are equal, and react normally. The heart shows enlargement to the left. The sounds are rapid, and a systolic murmur is heard over the whole precordial region, loudest at the pulmonic area, and transmitted into the axilla. The pulmonic second is not accentuated over the aortic. The knee-jerks and plantar reflexes are equal and not exaggerated. Occasionally the right arm becomes rigid during the examination. The fundus shows no optic neuritis, but a few retinal hemorrhages are present.

Examination of the urine shows that it has a sp. gr. of 1007, is pale, acid, and with half a per cent. of albumen. The amount passed in twenty-four hours was about two quarts, with 7 per cent. urea. Careful but prolonged search showed a very rare hyalin, or finely granular cast. The temperature within the next few days ranged between 99° and 100° F. The pulse was about 100, and the respiration 20. Unconsciousness persisted, and incontinence of urine developed, and, finally, swallowing became difficult, and the heart grew weaker. Death took place three days after the above examination.

CXXVI.

Periods of Unconsciousness, and Other Attacks of Peculiar Sort.

In April, 1902, a woman took her son, a bright-looking boy of seven years, to a physician for the treatment of certain peculiar attacks to which he had recently become subject. She said that last August he began to have spells in which he would fall to the floor and lie still, with the eyes closed, in a perfectly relaxed condition, remaining so for five or ten minutes. There were no convulsive movements, nor

was there involuntary micturition during the spells. He had four or five of these attacks at intervals of one to three weeks. Then she had him circumcised, and the attacks did not recur for five months, after which time they returned with as great frequency as before.

Two weeks previously to her visit, while the boy was undressing one night, he suddenly uttered a scream, followed by a queer-sounding laugh, and started to run across the room. He was caught and held by his mother, but tugged and pulled to get away, crying out that "the cats were after him," and shouting, "I'll kill that black cat"; "Keep them away," etc. All the time he was looking wildly around, and his face had a queer expression. This lasted only a few minutes, and he then fell into a deep sleep. Several days later he had a similar attack, in which he apparently saw horses, and wanted to get away and drive them. A third attack came while he was taking a walk with his mother. On this occasion he began screaming, and ran across the fields, making noises like the yowling of cats. It was several minutes before he was caught. This, too, was followed by profound sleep, from which he could not be awakened for several hours.

The father had been three months in an insane hospital for alcoholism just before the birth of the child, but the family history was otherwise not remarkable.

CXXVII.

Eccentric and Violent Disposition; Prolonged Unconsciousness, with Temporary Paralysis and Altered Reflexes: Recovery.

This patient is a large, stout, though rather pale woman of twenty-six years, who has always been of a neurotic disposition. Her temper is uncontrollable, and her husband says that, when things do not go to her liking, she will stand still a minute, white and trembling with anger, and then, with eyes rolling up, she will fall to the floor in a fit.

thrashing about and dashing herself against the furniture. These paroxysms often last five or ten minutes. Several times she has seized a knife, in her anger, and threatened to kill herself, fighting hard against her husband when he tried to restrain her.

Two weeks previous to the time when her present trouble began, she had given birth to her second child. There had been considerable loss of blood during the labor, but she had apparently passed through the puerperium all right. She went to bed one night feeling perfectly well, except that she was somewhat upset by a little quarrel she had had with her husband, but was found at two o'clock the next morning in a convulsion, which lasted only a short time and left her in a state of coma. The unconsciousness continued through the night, and the convulsions recurred every hour with great regularity. When seen later on the ensuing day she was lying on her back with the face and eyes turned sharply toward the left, and in a condition of coma from which she could not be roused. The pupils were normal, and reacted to light. There was no sign of paralysis of the face nor extremities. The knee-jerks were exaggerated. There was no œdema of the legs. The heart and lungs seemed healthy. During the examination the patient was seized with one of her convulsive attacks. It began with a rolling up of the eyes, followed by twitching of the mouth and then a general clonic spasm of the extremities, lasting two to three minutes. This gave place to a condition of tonic spasm lasting a few seconds, and causing marked cyanosis and stertorous breathing. The blood examination showed Hgb. 45 per cent., reds 4,000,000, whites 12,800. The urine was pale, acid, of sp. gr. 1021, and contained albumen $\frac{1}{12}$ per cent.; urea 1.2 per cent. Sugar was absent. The sediment was slight in amount, and showed, under the miscroscope, a few hyaline and finely granular casts.

The patient was given a hot-air bath, and perspired pro-

fusely. The condition remained much the same, however, during the next twelve hours, except that the conjugate deviation disappeared and the eyes closed. The epileptiform attacks continued to come every hour, and between them the right arm remained rigid and twitched occasionally.

On the second day the left arm and leg were perfectly limp and lay still as if paralyzed, while the extremities on the other side were kept constantly moving about the bed. The right knee-jerk was absent, and the left slight. A pin-prick caused the drawing away of the right arm, but was apparently not felt on the left side at all. There was incontinence of urine and fæces; and the temperature, which had been 101°, rose to 105°, the pulse being 130.

On the third day the convulsions became less frequent, and were limited to the face and right arm; and on the fourth day the left arm became rigid, and the convulsions were limited to the face and left arm. The temperature dropped to 101°, and became normal two days later.

During the next few days she opened her eyes occasionally; but there was no expression in them, the patient being still unconscious of her surroundings. Ten days after the beginning of her illness her husband stood by the bed for several minutes, trying to make her recognize him; but she showed no sign of intelligence. An hour later, however, she turned to the nurse and told her all about her husband's visit, apparently considering it a great joke that he had thought her unconscious. At this time the knee-jerks were much exaggerated and equal.

Two weeks after the beginning of her illness she was able to sit up in bed, but refused to help herself, saying that her hands were powerless. Food was placed before her, but she said she could not feed herself. After five minutes it was taken away, and she became very angry. Six hours later she was offered food again, and ate naturally without assistance.

Although the patient had apparently recovered at the end

of three weeks, still she behaved at times in a peculiar manner. She would often wander about the house in an aimless sort of a way, and on one occasion, after a bath, started out of the bath-room before dressing herself.

CXXVIII.

Right Ophthalmoplegia, Left Hemi-anæsthesia and Hemiparesis.

A minister, fifty years old, awoke one morning to find that he could not open his right eye as well as usual and that the whole left half of the body was "numb." He kept about as before, but began to notice, after the lapse of a few days, that besides the drooping of the lid he was getting double vision.

By the end of the second week it was noticed that he scuffed his left foot in walking; and during the next few days his left arm and leg grew progressively weaker, so that by three weeks from the onset of his trouble he was unable to stand and became confined to his bed.

There had been no headache nor vomiting, and no disorder of micturition. His friends had not noticed any change in his disposition; and he declared that he had felt perfectly well up to the time of the beginning of his illness, and denied having had any venereal disease.

Physical examination shows a well-developed and well-nourished man. There is complete ptosis of the right eyelid and paralysis of all the external muscles of the right eye, while the left eye moves fairly well in every direction. The right pupil is dilated, and the left pupil contracted. Both are regular in outline, but neither responds to light.

The tongue is protruded in the median line. The speech is thick and at times hard to understand.

There is complete left hemi-anæsthesia and also paresis of the lower facial muscles on the left side. Movements of the left arm and leg are very feeble and performed with difficulty.

The heart sounds are normal, the pulse rate 90, the impulse regular, and the arterial tension low. There is no evidence of thickening of the artery wall in the radial and temporal vessels. The knee-jerks are equal and not exaggerated: the Bakinski phenomenon is present on the left side. The mental condition is dull. The patient multiplies the digits promptly and correctly, but, when asked to name the months of the year, he begins with April, and goes slowly, but correctly, around to July. On being questioned as to when he was out of doors last, he says he was out walking a few hours ago,— a thing he has not done for a week.

CXXIX.

Transitory Hemiplegia during Typhoid; followed by Attacks of Paræsthesia in the Left Hand and occasionally Loss of Consciousness.

Male patient, unmarried, twenty-one years of age, first seen April 7, 1890.

The patient reports that he was perfectly well up to three and a half years ago (October, 1886). No convulsions in infancy; family history good. At the date just mentioned he was taken sick with a continued fever, believed to be typhoid, which lasted for thirteen weeks. In the very first stage of this illness his father went into his room and found him unconscious; but he soon regained his senses, and seemed as well as before. Two or three weeks later, while in the height of the fever, and while suffering from severe pain in the head, especially on the right side, he felt his left hand numb one day, and almost immediately after this became entirely paralyzed on the left side. The face, arm, and leg were involved; and at first there was difficulty in swallowing. At this same period he was unable to open the right eye, and suffered from double vision. The pain in the head lasted three or four weeks. The paralysis began to pass away after a few weeks, and before long had entirely

disappeared except perhaps for slight traces. About two years after these circumstances, his health in the mean time having been good and his mental power excellent, he began to suffer from the attacks for which he sought my advice. These consisted in peculiar and indescribable sensations in the left hand, spreading thence up the arm and sometimes attacking the left cheek, where the feeling was described as burning in character. Occasionally there would be a strange sensation in the head, described as "rush of blood," before the numbness in the hand. He thinks the leg was not involved in the slighter seizures, but says that during convalescence from a severe attack it would feel heavy and clumsy. Most of the attacks consisted solely of these abnormal sensations, which would increase for one or two minutes, then gradually diminish, but without wholly disappearing until after perhaps ten minutes. Sometimes even later than this, slightly unnatural sensations remained, associated with a sense of weakness and helplessness in the hand. In connection with this numbness the fingers would sometimes twitch a little; and a few times, perhaps six in all, he had lost consciousness, sometimes biting the tongue and having a full convulsion. The attacks were not accompanied by any marked disturbance of speech. On two occasions he had had a slight blurring of the vision, not attended by numbness of the hand, and lasting one or two hours. The remainder of the history will be given during the discussion.

CXXX.

Gastric Symptoms; Vertigo; Morbid Fear.

The patient is forty-two years old, unmarried, a nurse by profession. She was always of nervous temperament, but had quite a collapse after the grippe, three years ago, and has never been well since then. She now complains of a tight feeling round the head, and at times has severe vertigo, especially if there are noises about her. With the

vertigo there is apt to be sense of confusion in the head. After being ill for a year, she went to the Adams Nervine Hospital, where she remained for another year, five months of it in bed. She improved somewhat, but had a great deal of distress after eating, besides nausea, vomiting, and a continuance of the dizziness. After leaving there, she suffered violently from nausea and lost flesh and strength. Scarcely any food could be retained. For the past four months she has had no vomiting, but a great deal of gastric distress whenever she is fatigued. Besides these special symptoms there are certain others which seem to shade over into them. Thus it distresses her greatly to go over the stairs, partly because it causes a feeling of dizziness and partly on account of a "sort of fear" which comes over her. This sense of fear she has been subject to ever since she was a child.

Thirteen years before the first examination she had been a teacher; then she had broken down entirely, and among her symptoms at that time this strange dizziness figured prominently. Half a dozen years after that she had a double ovariotomy performed, on account of a supposed closure of the Fallopian tube, and after this she was so much better that she entered a hospital to be trained as a nurse. She has never had any reason to think the operation led to unfavorable results, and a pain in the abdomen from which she had suffered severely before that, disappeared immediately afterward. The eyes had troubled her, and glasses had not done her much good.

The vertigo, of which she constantly spoke, proved, on further inquiry, to be rather a sense of up and down motion, combined with a feeling as if the floor or sidewalk was rising in front of her, and then falling again.

Physical examination showed a normal condition of the heart, except that the sounds were sharp and "valvular." The hands were the seat of a fine tremor, the muscular system was poorly developed, and the general nutrition not

very good. This patient was most persistent and conscientious in following out a good hygienic treatment, and gained somewhat, but still remained a prey, when fatigued, to symptoms of the above-mentioned character.

CXXXI.

Occasional Fainting Spells.

A man of forty-five, of excellent habits and with no history of venereal exposure, was attacked in June, 1901, with a "fainting spell." His occupation was that of a butler; and he was working in the pantry at the time, cleaning knives. When the attack came on, he fell suddenly to the ground unconscious, without warning. He remained unconscious for twenty minutes, it was said; and, after coming to himself, he felt weak and had a vague sense of something having gone wrong, though he could not say what. An hour after this he was able to go to work again. After that he was entirely well until eight months later, except for being rather nervous.

At the end of that period, however, he had another attack of similar character, recurring as before at about eleven o'clock in the forenoon. He was again unconscious for twenty minutes, and afterwards had no memory of the occurrences during that period. He did not bite his tongue in either of these attacks, nor did he become convulsed.

In other respects his health has been excellent, except that his eyesight has been failing somewhat, he thinks. He can read perfectly well without glasses, but a sort of dimness comes over the field of vision every now and then. He never had any attacks attended with loss of consciousness before, not even in childhood. His sleep is good, his digestion good. The pupils react normally to light. The knee-jerks are present on both sides.

The heart beats with a thumping impulse. The pulse tension is very high (700 to 800 grams), and the walls of the radial

artery are thick and the course of the vessel is tortuous. The arteries of the foot are normal. The retinal arteries vary in size in different parts of their course.

This patient was given ten grams of iodide of potash twice a day, and $\frac{1}{200}$ gr. nitroglycerine four times a day; and these he continued to take for a number of months. A year later he called again, saying that he had felt very well indeed and had had no attacks, but the pulse tension was still very high (500 to 600 grams.)

CXXXII.

Epileptiform Seizures; Slight Mental Defect (?)

A man of forty-six, not admitting any luetic infection, had an attack on June 14, 1902, while riding in a car in the subway, in which he had lost consciousness. He was taken to the Emergency Hospital at Haymarket Square; and when he came to himself, an hour or two later, he could remember nothing of what had happened. It was, however, said by bystanders that he had had a convulsion.

On inquiry it was found that about a year previously he had had another attack of similar sort to this, but even worse. He was unconscious for a number of hours in all, and in that time had four or five convulsions. Three years ago he was in a very nervous state, but had no convulsion or loss of consciousness. A year ago it was found that the urine contained albumen and casts for a time; but a very careful physician decided, after thorough investigation, that he had no chronic nephritis, and, in fact, the suspicious signs disappeared before long. In former years he used to have headaches, but during the past three years these have been almost absent.

His wife reports that his mental condition is not quite what it should be, that he takes less interest in affairs, and is more childish than formerly. He spends a long time over his newspaper, and is unwilling to go out with his

friends as usual. She says, also, that he makes statements of facts that are not quite accurate. Thus he announced one day that he had bought a yacht, and gave the price, etc.; yet this was by no means true. It should be said that shortly after the epileptic attack first mentioned he was put on a bromide treatment which he has followed ever since, though he never took more than 60 grs. a day, and usually less than this.

A careful examination of the pupils revealed nothing wrong. The knee-jerks were normal, and the heart normal. On the other hand, the speech was a little obscure and thick, and the handwriting was careless. When asked to write a short sentence, he misspelled some words with which he should have been familiar.

No disturbance of the gait could be noticed.

Under a change of treatment this patient improved very materially, so that by the end of a few weeks more his friends considered his mental condition normal.

CXXXIII.

Vertigo with Ear Disease.

This patient was a man of thirty-nine, who consulted me in April, 1900. His previous health had been good in most respects; and he thinks that he was not "nervous" until his present illness began, though through the distressing influence of his present troubles he has become so nervous that everything startles him. As a child, he suffered from sick headaches which used to last a day. His father also suffers from sick headaches, and also two brothers, one of his own children, and his wife.

His principal symptoms consist in attacks of vertigo, without loss of consciousness and coming on without obvious cause. As these attacks approach, the objects which he looks at seem to move, giving him a feeling as if he must close his eyes. He has had these attacks for five years, and

they may occur at any hour of the day and under a variety of circumstances. At times this apparent movement of objects is followed by a sensation as if some one had struck him on the back of the head. He does not think that the movement of objects is always in the same direction; but, however this may be, he is no sooner attacked than he turns as "white as a sheet," and then begins to perspire so that the sweat rolls off of him in great quantities, wetting his clothes through and through. Then he begins to vomit, and this is repeated half a dozen times. He vomits not only food, but great quantities of mucus and fluid. A bad attack may last from an hour to an hour and a half, and then a day or two may pass before he gets over the effects of it, during which time he lies in a stupor, suffering greatly from pain in the back of the head. Physical examination reveals nothing abnormal.

CXXXIV.

Dizziness and Hemi-paræsthesia, of Sudden Onset.

A lady of fifty-one, who presented an appearance of robust health, came for treatment on account of dizziness and ringing in the left ear. She said that she had always had perfect health until about two months before her visit. At that time she woke up one morning feeling as if she could not breathe, and springing out of bed came into her husband's room. He could see nothing wrong with her, but almost immediately she began to feel as if a battery was being applied to the left side of her head and face and left arm and leg. For a time she was confused, and her left arm and leg were weak and awkward. Possibly there was a momentary loss of consciousness. The speech was not affected, except to the extent of being slightly thick for a brief period. Ever since that attack the paræsthesia of the left limbs and left side of the face has been constantly with her. There has also been a continual ringing in the left

ear; and the skin of the face in the neighborhood of the ear has had a numb, unnatural feeling. There has also been a sensation as if there was a ball in the ear; and yet there has been no loss of hearing, but rather a hyper-acusis. She has also been constantly dizzy in some measure.

She seemed, at first, in a perfectly normal condition; but on very close inspection it was noticeable that, when she put her tongue out, there was the slightest bit of drawing of the face toward the right side, and that the right naso-labial fold was slightly more pronounced than the left. The motions of the left arm and leg were good; but the sense of position was not quite perfect, nor the power of recognizing small objects. Still, she said she could use that hand just as well as the other. The examination of the heart showed nothing abnormal except a sharp accentuation of the second aortic sound; but the pulse tension was very high, 600 to 700 grams, the usual pressure being about 300.

The urine contained the slightest possible trace of albumen and occasional hyaline casts, but no sugar.

Under iodide of potassium and nitro-glycerine the symptoms became less marked, but still showed a strong tendency to persist.

CXXXV.

Vertigo.

This patient was a young man of nineteen, of good personal and family history, with the exception that his mother was of nervous temperament and that he himself had had some catarrhal trouble of the left ear for the past two years, with marked impairment of hearing and constant tinnitus.

Two years ago he suffered greatly, for three or four months, from dizziness on walking. Next he had an attack of severe dizziness with vomiting in the night, so that for a couple of hours he could not raise his head without vomiting and a feeling as if objects were whirling about. From time to time these attacks have recurred. One day,

when he was sitting at table, he fell from his chair to the floor, and, as he thinks, lost consciousness, for which reason he cannot give an exact statement as to whether dizziness was present or not. At this time he had been several months without attacks, but they then returned.

About a month ago he had a severe attack, associated with a sort of noise as if some one was giving him a clap on the ear. Sometimes sitting in a rocking-chair and looking out of the window, or gazing out of the train at passing objects, or even watching another person who is rocking, will bring on an attack.

The first sign of an attack is usually a feeling as if the objects at which he is looking were beginning to move. Then the dizziness comes on; and, after this, if the attack is severe, he begins to vomit. Even when the attack has passed away, his head feels heavy all day long, and he is greatly prostrated.

Careful treatment by large doses of quinine and other remedies brought some relief, but did not induce a complete cure.

CXXXVI.

Vertiginoid Attacks.

This patient is an unmarried lady of thirty-two, a teacher by occupation. At intervals from one to five weeks she suffers from a queer feeling in the head, suggesting dizziness yet not associated with an actual "swimming" sensation. Sometimes, unless she lies down at once, she has as much as she can do to keep her feet. If attacked while in school, she can hardly get out of the room. Occasionally she gets deathly sick at the stomach, and sometimes feels as if choking for breath. Usually she gets pale with the attacks, and still more after them. They last for five minutes, and leave her feeling much done up. There is loss of consciousness. At the time of the attacks there is often a sound of escaping steam in the ears, and a sense of rum-

bling in the head. At such times she cannot hear quite well, but there is no permanent defect, and at a careful examination of the ears at the Eye and Ear Infirmary no local disease was found. Neither could any trouble be detected in the eyes. When she staggers, the tendency is quite definite to go toward the right. Her general health is not good; but a thorough tonic treatment, such as she was able to secure, did not bring about relief.

CXXXVII.

Sudden Attack of Convulsion of the Right Arm and Leg, lasting Half an Hour or More, and terminating in Partial Hemiplegia.

A somewhat elderly man, unmarried, and in his youth troubled with syphilis, had suffered for many years from tabes. He bore his sufferings with great courage, but became finally odd and irritable in disposition. One morning his physician was called to him in great haste, and on arriving found him in bed, with the right leg, and to a less degree the right arm, in a clonic convulsion. The whole leg was affected; and the movements, though not very extensive, were sufficient to shake the bed. The arm was much less severely involved, and the face not at all. The patient was flushed, but conscious and able to discuss his condition. After half an hour or so the convulsion gradually subsided; but the leg was left in a helpless condition from which it never wholly recovered, though he was quite soon able to go about with some aid. His spinal symptoms were not very much modified by this attack; but he grew gradually worse, and died by the end of another year. Before the end of this time the arm had substantially recovered, though the leg still remained with its movements impaired.

At the *post-mortem* examination a linear scar, of reddish-brown color and about three-quarters of an inch in length, was found a short distance beneath the cortex of the para-

central lobule, running parallel with the surface. There was no other cerebral lesion of a macroscopic character.

CXXXVIII.

Paroxysmal Vertigo and Attacks of Unusual Form, with Loss of Consciousness.

This patient was a man of thirty-two, a letter-carrier by occupation, of good habits as regards stimulants, and free from specific diseases. For several months he had suffered from severe attacks of vertigo, and for more than a year before that there had been a slight "lightness" in the head on rising in the morning. The attacks of vertigo also generally came in the morning, sometimes before he got up, and sometimes not until breakfast time. The feeling was like that of a person who has been whirling round and round. Occasionally he has had nausea and vomiting as well as dizziness. He has never actually fallen, but staggers about like a drunken man. One would naturally wish to know the condition of his auricular apparatus; and, in fact, there had been catarrh of one ear, with slight defect of hearing, for a long time past, and a later examination by Dr. J. Orne Green showed that there was fixation of the stapes, by which the labyrinthian pressure was increased. There was also some error of refraction, but the correction of this by glasses brought him no relief.

As regards his general health, he had always been a man of nervous temperament; readily tired and not a first-rate sleeper. Furthermore, even when a child, he used to have attacks, in which he would run to his mother, calling out that he was "thinking of something which frightened him," but he could not tell what it was. He says now that it is more as if he *stopped* thinking for a moment. He also had "spasms" as a child. Attacks similar to these just mentioned still occur about once a month, lasting for half a minute. They are so slight that no one would notice

anything wrong except perhaps a sudden paleness, but this is so marked that people occasionally ask him if he feels sick. He does not lose consciousness, and can go on with what he is doing. Formerly these attacks used to be followed by violent headache, lasting for many hours or a day; but now this tendency is not marked. These seizures are not followed by dizziness.

His father is a man of nervous temperament and alcoholic in his habits, though otherwise well. His mother was not a strong woman, and several of her family had died with tuberculosis.

The attacks of dizziness were so bad and so little controlled by any treatment that Dr. Green decided to operate on the ear, for the purpose of loosening the stapes. For a time there was great improvement, so that he had no attack for ten weeks, though the hearing in the affected ear was lost. Then the attacks began to return; and occasionally he would fall over in them, either to his knees or completely to the ground. In one such attack he thinks he lost consciousness for a moment before falling, and that the fall occurred on that account. He came to himself, however, instantly, though he could not get up until the dizziness had passed away, which was not for fifteen or twenty minutes. Even after that he staggered about for half an hour or more. The other seizures also continued, though they were somewhat susceptible to treatment.

CXXXIX.

Headache.

This patient was a boy of eleven, who had been the rounds of the doctors on account of harassing headaches, which had broken into his usual habits of life and had kept him from school most of the time for more than a year. At first they used to come at intervals of one or two weeks, and last only for a part of the day. Then they became

more frequent, until finally they occurred daily. The seat of the pain was just above the root of the nose, and it never extended much beyond that area. At one time the nose was thoroughly cauterized, under the impression that a thickening of the mucous membrane might account for the trouble; and, indeed, this was followed by an interval of freedom from headache of three months' duration. Encouraged by this success, the parents urged a repetition of the treatment; but this time it gave no relief.

The eyes were examined over and over again by different oculists and a diffuse choroiditis was found, considered as probably congenital. [Conditions of this sort do not, indeed, usually cause headaches; but there are conditions under which any strain may contribute to such a result.] Use of the eyes did not, however, increase the pain. The eye muscles were then found to be a little at fault; and prisms were advised, but gave no relief. Instillations of atropine were used daily, to secure relaxation of the accommodation; but this, too, did no good. He had no coryza, and was generally free from colds. He was frequently dizzy, and the objects he looked at seemed to move. Neither going to school nor studying made the pain worse; but he got up, as a rule, feeling so wretchedly on account of the pain that he preferred to lie in bed, and, in fact, he had not been to school for six weeks.

Examination of the blood and urine showed normal conditions. He was a bright boy, but excitable and restless and curious about everything, and intense in his play. He slept fairly well, but would wake early, and when asleep would grind his teeth. Through the greater part of his childhood he seems to have been well enough; but he had been born at eight months, and weighed then only four pounds, and was kept alive with difficulty in an incubator. He is an only child; and the mother and father are both of nervous temperament, though otherwise well. One brother died of tuberculosis in infancy.

Besides these headaches, this boy has been greatly troubled by occasional attacks of two other sorts. One of these is dizziness, coming on in sudden "spells" without apparent cause. While these spells last, which is from a few minutes to half an hour, he is not able to walk without staggering; and the fear of them makes him anxious and distrustful of himself. Consciousness is not disturbed during these attacks of dizziness, but he feels sick and looks pale. The other attacks occur at much longer intervals, perhaps four or five times a year; but he has had them ever since he was three years old. In these attacks consciousness is lost for a moment, and its recovery is rather sudden. They generally occur in connection with some exciting cause. Thus he had one after cutting his finger; and, after being vaccinated, he had a long series of them, covering in all about an hour or more. In these attacks the muscles are contracted all over the body, the arms are slowly flexed, and the eyes are "set." The tongue is not bitten; but, as the attack comes on, there is often a spasmodic cry.

The treatment which was eventually followed proved very successful as regards the headaches, which were his sole cause of complaint at first; and from the time it was instituted he remained nearly free from pain for a year, though occasionally suffering slight relapses. Part of this treatment consisted of the use of static electricity, and it was found that he could be easily thrown into first degree of hypnotic sleep during this procedure.

CXL.

Recurrent Attacks of Numbness of the Right Hand, and Convulsions of the Hand, Arm, and Face. Operation.

This patient was a man of thirty-two, of good previous health, except that he had shown and still showed slight signs of pulmonary tuberculosis, no longer in an active state. For nearly twenty years he had been subject to

sudden attacks, characterized by prickly sensations in the right hand, usually confined to the first two fingers and thumb and the adjoining surface of the palm. Occasionally these sensations would extend up the arm, and would involve the right side of the face and tongue. Occasionally, also, the fingers and arm would be the seat of clonic convulsions. These attacks have usually been unattended by loss or impairment of consciousness; but on a few occasions, in severe attacks, consciousness has been lost. On such occasions this loss has been preceded by painful sensations, gradually mounting up the arm from the hand, as if the arm were being chopped off shorter and shorter by successive blows of an axe.

On careful examination the sensibility was found slightly impaired, both to touch and pricking and to heat, over the palmar surfaces of the last phalanges of the fore-finger and thumb, and perhaps in less degree over the whole area designated above. On Dec. 15, 1899, this patient was trephined over the hand-area of the cortex by Dr. J. C. Warren; and a small tough adhesion was found between the pia and dura mater, associated with opacity of the pia over a larger area. The pia and adjoining portion of the cortex were removed. This was followed by an extension of the tactile anæsthesia and paræsthesia to the rest of the hand, and by a slight facial paralysis and motor aphasia. The hand was also quite weak for a time, especially as regards movements requiring fine co-ordination, such as buttoning. On the second day after the operation he had another of the severer attacks with loss of consciousness. From then up to the present time there has been no return of the severe attacks; but the "numb spells" in the hand have been rather more frequent than before the operation, and have involved a somewhat larger area. I would refer in this connection to two other cases, the patients in both being young men, in which a closely similar condition was present. In one of these the attacks of paræsthesia

involved all the fingers : in the other they were usually or often confined to the last two joints of the index and middle finger and the last joint of the thumb, and were quite painful in character. In the first case an operation showed a somewhat extensive velvety condition of the pia, which, as the history showed, had evidently resulted from a meningeal inflammation or hemorrhage attending an attack of typhoid. The other patient was operated on by Dr. Warren. The surface of the brain and the membranes looked perfectly healthy, and no incision was made into the cortex. The hand was numb and weak for a time, but soon recovered. There were no attacks for five months ; but they then returned, though in a less severe form than at first.

CXLI.

Recurrent Attacks of Disturbance of Speech, associated with Numbness of the Right Arm, and Headache.

A woman of fifty-three, of nervous temperament and neurotic antecedents and subject to occasional sick headaches, woke one morning feeling her right hand weak and numb, and with slight confusion of speech, both of which symptoms passed away in the course of half an hour. Two days later she had another, similar attack ; and subsequently they recurred a good many times, at intervals of a month or two. Sometimes the difficulty of speech showed itself without any affection of the hand. The attacks were usually followed by slight headache. The urine was normal in all respects, the heart and arteries were normal, and nothing unusual was found on ophthalmoscopic examination. There had been no loss of consciousness with any of the attacks.

CXLII.

Temporary Attacks of Hemi-anæsthesia.

A business man, fifty-one years old, had been troubled during the past year and a half with a tingling and numbness and an actual loss of sensibility, of both feet and over the area of distribution of the lower sacral nerves, so that the act of micturition did not give rise to the usual sensation. He had had no serious disease previously to this, so far as he can remember, except that he contracted syphilis ten years ago. He uses alcohol and tobacco moderately, and lives a well-regulated life.

One day, after he had been under more or less irregular treatment for some time, he suddenly had a feeling as if the skin over the left side of his chest was being puckered up, and this was followed immediately by a sense of numbness in the left arm and leg. He was standing talking with a friend as this attack came on; but all at once the left leg lost its strength, so that he almost fell, and, on trying to reach out for support, he found he could not raise his left arm. He then tried to ask his friend for help, but his speech was thick and unintelligible. He was assisted to a couch; and, when seen an hour and a half later, he had apparently recovered.

Examination showed the pupils to be small and slightly irregular, with almost no reaction to light. The fundus was normal, except for a small area of old choroiditis. Sensation and motion seemed unimpaired over all parts of the body. The heart was not enlarged, but there was a faint diastolic murmur in the aortic area, transmitted downward along the left border of the sternum. The pulse was regular, and of fair volume and tension. There was no apparent arterio-sclerosis. The knee-jerks were present, but the right was a little livelier than the left. The urine was normal.

During the night following the above-described attack the

patient had a sense of heaviness and numbness in the left arm and leg on two occasions. This lasted an hour the first time and ten minutes the next, but neither time was there any loss of power.

Vigorous treatment was begun at once; and there has been no return of the trouble since then, a period of two years.

CXLIII.

Pain in the Head, Dizziness, Nausea, and Vomiting; Unsteady Gait.

A man forty-eight years old had been deaf on the right side since the removal of a polyp from that ear, sixteen years previously. Three months ago he had pleurisy, with exudation; and the convalescence from this was complicated by left otitis media, resulting in rupture of the tympanic membrane. The ear discharged for three weeks; and then inflammation of the mastoid developed, which was operated on two weeks ago. This left him free from pain for a week, and then he began to suffer from a left supra-orbital and occipital headache. Now, for five days, he has had dizziness and nausea, with continual vomiting; and his gait has been unsteady. The temperature has been somewhat elevated (99°–101°), and the the pulse rate is 60 to the minute.

Examination shows the mental condition of the patient to be normal. There is considerable photophobia; but the pupils are equal and react normally, and the fundus is normal. There are no signs of any disturbance of sensation or motion of the extremities, except in the left arm, which shows marked inco-ordination. The stomach examination shows no abnormal local condition. The knee-jerks are normal.

The urine is normal, and the blood count shows 11,000 whites per c.m.m. Operation on the left mastoid showed clean granulation tissue and no pus. The adjoining dura showed no evidence of any pathological condition.

The same symptoms persisted after the operation. Surgical aid was resorted to a second time, and resulted in a cure.

CXLIV.

Headache, Vomiting, Optic Neuritis.

A lady of thirty-eight, with a good personal history and free from all suspicion of venereal disease, began to suffer from rather severe headaches in the summer of 1884. These headaches were not constant, but intermittent; and the pain generally passed away at nightfall after having lasted through the day. Her father, she said, had suffered from attacks of more or less similar character. These headaches gradually increased in intensity and frequency, until of late she has had one or two a week, although they have not been so severe as to send her to bed.

Three months before her visit she had a terrific pain which lasted for two days. This occurred just before the menstrual period, but ever since then all the attacks have been more frequent and severe. When she wakes in the morning, she feels "as if she should die" with distressing pain in the forehead and sometimes all over the head and the back of neck. Sometimes this pain passes off in an hour or two, but it may last a day. Twice within the last three weeks she has had severe vomiting, coming on the first thing in the morning. She has also had a great deal of vague dizziness, attended with an indistinctness of vision; and her gait has become a little uncertain.

On physical examination the patient was seen to be a healthy-looking person, with a pleasant but somewhat unnatural manner. She was rather talkative, yet at the same time apparently a little indifferent as regards her illness. She could stand on either foot alone even with the eyes shut; and yet, as she walked, it was obvious that her sense of balance was not good. Closure of the eyes made no difference. The pupils were rather large in moderate light; and,

while the left pupil was found to respond readily to changes in light intensity, the response of the right pupil was much less prompt. The right pupil, too, was much larger than the left pupil. The vision was considerably reduced for either eye, and double optic-neuritis was present. The knee-jerks were exaggerated. The heart was in a normal state, and the pulse was normal. Examination of the urine showed nothing of importance.

As time went on, this patient grew very gradually worse, and finally lay for a long time in bed, almost unconscious, yet never paralyzed in any of her limbs. The only localizing sign was that the right side of the face was slightly paretic, while the tongue deviated slightly toward the right. The optic-neuritis was greater on the right side, and more pain was felt on that side of the head than on the other side. At times the pain in the back of the neck was complained of even more than the pain in the head. Speech grew gradually less and less, until finally she could answer questions only by monosyllables, and finally not at all. Death seemed to be due mainly to exhaustion. The account of the *post-mortem* examination will be given with the discussion of the case.

CXLV.

Neurasthenia with Vaso-motor Symptoms.

This patient was a young business man with two healthy children. His habits were good; and his personal history contained nothing of importance, except that when a child of seven months he was very ill and was with difficulty kept alive.

His principal symptoms at the time of the first examination were great exhaustibility, palpitation, and pains in the back and chest. Every effort was so distressing to him that he avoided his acquaintances on the train as he came into town in the morning from his home in the suburbs, and that he hardly allowed himself to read. He said that, one year previously, he had had a sort of collapse while riding in the

train, for no obvious cause except an absorbing conversation; but even before that his nerve-strength had been failing in various ways. He has not been to church or the theatre for a long time, because when in such places he finds himself with an overwhelming desire to get out. Even riding in the train is distressing to him for the same reason. He is very sensitive to storms. On the slightest excitement he flushes very easily, and also gets short of breath and has a sense of palpitation all over. Nevertheless, under favorable conditions he can do a considerable amount of purely physical work, and thrives best under an out-of-door life.

Physical examination reveals nothing of importance, except the fact that the patient looks in florid health.

CXLVI.

General Neurasthenic Symptoms, associated with Convulsive Attacks ending fatally.

[Case reported by Dr. E. W. Taylor.]

A single man, thirty-six years of age, of good family and previous history, visited the World's Fair in 1893, and while there had an attack of mental confusion and vertigo as he was walking about the grounds. This spell was not of long duration, and he had no more trouble for a year and a half. Then he had a return of the same symptoms on several occasions; but they improved somewhat under treatment, though some confusion still persisted, especially when he was in a crowd. He was also troubled with a sense of weakness in the legs, and his head felt as if it were "floating in the air."

In December, 1894, he had two attacks of unconsciousness, associated with convulsions. At this time his hearing became affected, so that sounds near to him appeared to come from a distance; and this annoyed him so much that he consulted an aurist, who removed some cerumen from one ear.

During the following eighteen months he was constantly subject to morbid fears, so that he was unable to walk in crowded streets or to enter a large building without a vague sense of apprehension. In 1896 and 1897 he had several more convulsive attacks, and the symptoms above cited were still a source of much trouble. He had read a good deal in medical books, and was greatly alarmed over many of his symptoms, to which he attached undue importance. He had no real headache, but complained much of a feeling of fulness in the head and of throbbing, neuralgiform pains over the eyes and on both sides of the head. He grew very timid about riding a bicycle, although he had always been accustomed to many forms of athletic sports.

Whenever he visited his physician he was always reassured, and felt better for a while. In fact, after one visit, he was able to walk down Boylston Street and enter the Public Library, which was more than he had been able to do for two or three years.

A careful physical examination in 1897 showed no evidence of organic disease of the nervous system, and no stigmata of hysteria. The eyes, however, showed a moderate degree of astigmatism and hypermetropia. The fundus was normal. Examination of the urine was negative. Glasses were prescribed, and the use of these gave complete relief from the headaches.

The following letter, written by the patient at this time, is of interest: —

I have postponed replying to your very kind letter until a sufficient length of time should have elapsed in which to determine definitely what, if any, change had taken place in my condition. My brother informs me that he has advised you fully as to the features of the attack which I had the day I left Boston; and, except to say that it was the mildest spell of the kind which I have ever had, and that I nearly succeeded in controlling it, I think it unnecessary to further allude to it. Since my return to Louisville, I feel that I have slowly but surely gained ground. I have

had no return of the attacks, though on two occasions I feel sure that, had I yielded, I should have succumbed to these spells. Protracted conversation, in which I am subjected to considerable mental strain, appears to be a prime factor in precipitating them; and on the two occasions referred to I was obliged to cease talking, not daring to attempt a renewal for at least five minutes. Another feature of my case which may or may not be of importance is the fact that I almost invariably feel worse immediately after meals than at other times, though the symptom is not nearly so marked as before I went to Boston. The glasses have practically eliminated the headache from my case; and, except after dark, when they appear to have a confusing effect, I feel that they have assisted me greatly in getting about. One singular and to me unexplainable result of wearing them is the development of a partial deafness at all times, and quite a marked obstruction of the hearing after dark, especially when situated amidst a confusion of sounds. Upon the whole, I have made quite an appreciable advance, and feel greatly encouraged. I am still taking forty-five grains of bromide daily. Thanking you heartily for the interest you have manifested, and assuring you that I will be very glad to write to you fully of the development of any new symptoms,

I am, etc.

The effort of inhibiting his convulsive seizures by force of will, suggested in the above letter, had been effectual on several occasions. Once he had the premonitory symptoms of an attack (flushing of the face and a sense of unusual fulness of the head), and held off the onset for several minutes, till the sudden slamming of a door precipitated it.

These seizures varied somewhat in their character. In several of those observed he was seen to raise his hand to his head as if it ached, and the face would flush: this warning gave him time to sit or lie down. Immediately following this there was a clonic convulsion of the lower jaw, and a peculiar "cry," which diminished with the intensity of the convulsion. During this time, which was about a minute, there was great cyanosis of the face and neck, the

superficial veins standing out prominently. The chin was raised and the head retracted, the hands clenched and arms half flexed, in a state of tonic spasm. Immediately following the convulsion the face became pale and the head rested back, while for about a minute he appeared semi-conscious, but would not answer questions. After some attacks, unconsciousness lasted ten or fifteen minutes.

During the latter part of 1897 there seemed to be some improvement under bromide treatment. Then the convulsive attacks became more frequent, severe headaches and vomiting set in, and the pulse gradually grew slower (40 to 50). Finally, coma developed, resulting in death.

CXLVII.

Nervous Symptoms, with Attacks of Mental Distress and Physical Emotion-signs.

A young married man of twenty-three, of good habits and living under comfortable circumstances, came complaining of a variety of nervous symptoms, and gave the following history: —

He had always been of nervous temperament even from boyhood, and for five years past he had been subject to asthma. At times his digestion had been poor. His worst suffering was, however, "in his head." He felt anxious, confused, and worried, and dreaded insanity; and, besides this, there were actual sensations about the head of a distressing character. He was always in a state of indecision, and this would go so far that sometimes at night he would take his clothes off and then put them on again; while, at other times, he would take off and put on his collar and cuffs, without reason, or, again, he would stand before the looking-glass and make gestures and faces at himself. Yet, withal, these acts seemed to be done rather from a lack of self-control than from any strong impulse. He says he is very forgetful, and he has shown many symptoms of a weak-minded sort

of despondency which induces him to lie down and cry, without cause. He was a weakly boy, and never accomplished much at school, although he is fairly intelligent, and now helps more or less to carry on his father's business.

It was learned that his sister died four years ago, and that this had apparently been the starting-point of an increase in severity of his symptoms. Again, three years ago, he had the "grippe"; and, this, too, made him worse. Ever since that period onward he has been subject to "spells" of nervous fear and excitement, which come on him at various times, as, for example, at a concert. In these spells he is overcome with a vague sense of fear, confusion, and mental distress; and with it his face gets flushed and his heart beats violently and a profuse perspiration breaks out. He does not like to read the newspapers on account of a sort of fear which is set up in his mind by seeing accounts of mischances to others, since this excites a vague anxiety for himself. He thinks if he could never see a newspaper he would get on fairly well. He is very "sensitive" to the opinions of others, and yet sociable and fond of company. He has no special fear of high places. At times he has been very hypochondriacal, imagining that he should experience all the diseases which he saw or heard of as affecting any one else.

He has been married about two years; and for the first year he was much better, but later grew somewhat irritable and cross, although always very dependent on his wife. Physical fatigue is easily excited and brings on pain across the hips, besides increasing his nervous symptoms. He frequently passes large quantities of light-colored urine, and this may mark a sort of temporary crisis in his symptoms. The eyesight is good, but reading makes him nervous.

The top of the head is tender, so that even brushing the hair lightly is unpleasant. Close inquiry about the digestion indicates that he suffers from excessive acidity in the stomach. Occasionally this troubles him so much that he

is hysterical and nervous until he can induce vomiting, after which he feels all right. Sometimes, especially when his stomach is out of order, he has visual illusions, the objects at which he looks seeming to advance and recede. At other times, as in the night, he has a feeling as if his hands, or other objects or parts of the body, were growing larger. In the morning he is tired. He gets out of breath on exertion; and, under excitement, palpitation of the heart comes on, as well as flushing of the face, even apart from the attacks mentioned above.

Physical examination shows a fairly nourished but excitable-looking person, with large pupils and flushed face. The chest has the form known as pigeon-breasted, and the muscular development is not good. There is, however, no distinct disease in any of his organs. The family history is of interest in the respect that three of his four brothers and his only sister are distinctly of nervous temperament, and that there is a well-marked history of tuberculosis in the mother's family, the mother's grandmother and four of her uncles and aunts having died of phthisis. On the other hand, his father and mother both seem to be free from marked nervousness; and the father has conducted a large business with success.

Although this patient tried many treatments without receiving much benefit, in the end his disease took a turn for the better, and he gradually became fairly well.

CXLVIII.

General Nervousness, associated with a sort of Tic.

A boy of nineteen was under the care of one of the writers, off and on, for several years, on account of general nervous symptoms which prevented him from applying himself to any mental work. He had never been robust, but was not formerly as nervous as now. He used to have a sort of tic of the head, which lasted for a long time, but

gradually wore away. His father, who was a man of good health, but of no great education, sent the boy to Harvard College; but he found himself so nervous that he had to give up his course. It cost him a great effort to pass the examinations; and this, he thought, injured him. At any rate, he took to his bed after a short stay at Cambridge; and his father had to take him home. On the way home he suffered much from severe pain in the abdomen, and could not sleep for three or four weeks except by taking hypnotics.

He suffers from a feeling of great physical restlessness, which he can relieve for an instant by making motions with his hands and feet, though only to find himself in constant need of repeating the motion. This almost irresistible tendency to make motions with his hands and feet is increased by any mental or physical effort; and, as he interprets it, the symptom is a physical, not a mental one. If any new idea comes into his mind, he feels compelled to turn it over a number of times, repeating each time the same course of argument. While he is walking, he perpetually carries his right hand thrust in between the buttons of his coat. He has no fondness for physical exercise and looks unfit for it; for his pupils are large, his shoulders stooping, the hands and feet cold, the heart sounds weak, and the whole nutrition poor. Yet he has no active mental depression.

This young man was treated by being removed from home, and placed in the family of an intelligent young physician and his wife. This admitted a certain sort of discipline which would not have been accepted at home; and under this influence he soon improved, though it was thought best not to repeat the experiment of sending him to college.

CXLIX.

Diffuse Muscular Rigidity, lasting Some Weeks and passing away slowly.

A boy of twelve, with personal and family history indicating a neuropathic tendency, came to the hospital complaining of difficulty in opening his jaws and of a general rigidity of the muscles of such a kind as to make walking difficult. He was in a hysterical sort of condition, crying sometimes without obvious cause and at times seeming able to accomplish small feats which he had declared to be impossible. There was also a slight degree of mental confusion, which made it difficult to get a first-rate history; but, so far as could be learned, he had been well until about four days before, when he was knocked down by a severe blow on the chin while he was playing with another boy, and had fallen in such a way that his knee was bruised.

Two days after the accident the stiffness of the jaws, and a rigidity of the muscles of the left leg, hip, and back, began to show themselves, preceded by restlessness; and since then he had been growing gradually stiffer. When one looked at him, a peculiar expression of the face was seen, a sort of comical mixture of smile and frown, the eyebrows being contracted and the muscles of the mouth being drawn outward and upward. The jaws could be opened voluntarily about one-sixteenth of an inch, and passively a little more. The eyelids were partly closed. His gait was scuffling, the left leg in particular being dragged as he walked. When he lay upon his back, there was notable arching of the lumbar vertebræ; and the position soon became irksome to him. The movements of the legs were slow, and all the muscles felt hard and tense. The degree of this rigidity, however, was variable. The knee-jerks were excessive, but there was no ankle-clonus.

The temperature at the first examination was 101° F., but afterward continued varying from 90° to 100°. The arms appeared to be unaffected.

Case CXLIX.

Several diagnoses were suggested, and among them the suspicion of hysteria was raised. This explanation seemed to receive some support from the fact that his pain-sense was a good deal blunted, so that a pin could be passed through the skin of the forearm on either side without exciting much pain, whereas the tactile sense was practically normal.

At times sudden spasms came on, generally from some external stimulus or excitement; and in these the legs were extended, the trunk and head stiffened and bent forward. This attitude corresponded with what has been called orthothonos, except that the lordosis continued as before. At night the patient would sometimes wake suddenly with a scream as if in fear, and spasms as before described would come on. These spasms were painful, though not exceedingly so. The general rigidity of the muscles diminished during sleep, but did not wholly disappear. Even the muscles of respiration were affected somewhat, so that the chest was as if encased in some unyielding substance. The tissues of the knee which had been bruised were excised and carefully examined under the microscope, but nothing abnormal was found.

The boy remained in this condition for several weeks; but little by little the stiffness of the muscles grew less, and he was finally discharged, well.

CL.

Tendency to Spasms of the Diaphragm and Limbs, occurring under Special Conditions. Recovery.

A woman, thirty years old, gave a history of having been in bed fourteen months with "cerebro-spinal meningitis," when five years of age. At ten years she had a mild attack of chorea, lasting several weeks. Aside from this her health had been good until April, 1901, when her sister died of phthisis. This brought on an unusual amount of mental

depression, but still she kept about her occupation as telephone operator.

At about this time she was suddenly seized, while at work, with a "chill," in which her teeth chattered and she shook all over. After an hour the severity of the chill diminished, and she was able to go home; but some general trembling kept up for two days, when the tremor gave place to spasmodic contractions of the diaphragm, occurring more or less regularly every few minutes. These contractions were sometimes associated with an expiratory grunt or bark. This tendency persisted for five or six weeks, and then suddenly stopped for a week, but started up more violently than ever one day while she was in church. On this occasion she tried so hard to check the attack that she fell unconscious, and remained so for two hours. There were no convulsive movements while she was in this state.

For two months after this attack she had only occasional spasmodic movements while about the house; but, whenever she went out on the street, the contractions would increase, and she would fall unconscious and remain so for an hour or more. This kept up till August, and since then she has had no very severe attacks; but, whenever she goes out or becomes startled, she is seized with clonic contractions of the diaphragm and abdominal muscles, and these contractions involve also the biceps and triceps, if she is under excitement. While in this state, she can get her breath only in gasps, and her speech is interrupted and jerky. On being left alone, she becomes quiet almost at once.

Examination shows the pupils to be very large, but equal, and to react normally to light. The cheeks are flushed. There are no disturbances in sensibility. The knee-jerks are normal. Ankle-clonus is not present. Under treatment the trouble became corrected in two to three weeks, so that even very severe tests caused no serious return of symptoms.

CLI.

Hemi-anæsthesia of Sudden Onset, with Partial Hemiplegia.

A teamster, thirty-five years old, came to the hospital, saying that three weeks before, on rising in the morning, he had found his whole left side numb and prickly, as if "asleep." The left leg also was weak, though he was able to walk.

On examination, besides impairment of strength of the left leg, he was found to have complete left hemi-anæsthesia, both for touch and pain. There was no heminopsia, and the eye-grounds were normal. The only thing in his personal history which seemed of importance was that he had syphilis three years previously, which had been treated by some physician for a year.

In the hospital he was given a treatment which caused rapid improvement; and at the end of six months the only symptom left was a subjective numbness of the left foot, which had not wholly passed away at the end of a year.

CLII.

Involuntary Movements of the Head and Face.

In November, 1901, a young lady of twenty-one came for consultation on account of twitching movements of the head and face, which had annoyed her for two years. The general character of these movements were such as might be made for the purpose of getting rid of some uncomfortable sensation, as the pressure of a tight collar, or the like; but, in fact, she was unable to prevent them or to foresee their occurrence. They came with greater frequency and force when she was tired, but she was never wholly without them for more than a moment. She had never been a very strong person, though lively and pleasant-tempered and fond of social pleasures.

A year before these particular movements began, she broke down in school with nervous symptoms, though not doing excessively hard work. She said that as a child she had had St. Vitus's dance; and, in fact, on close questioning, she admitted that ever since that period she had been liable, when fatigued, to involuntary movements, which recalled, on the one hand, those which she had had in childhood and, on the other hand, those which she had had at the time of the examination.

Physical examination showed a systolic murmur at the left base, but otherwise nothing abnormal. She had a bright color and rather excitable manner. Careful tonic treatment — arsenic, iron, tonic-baths, exercise, and rest — helped her somewhat; but the movements still persisted at the end of a year.

CLIII.

Tendency to fall to the Ground when Startled, with Alteration or Loss of Consciousness.

This patient is a married woman of thirty, American by birth. She came recently to the hospital, complaining that on slight provocation, as when startled or pushed, her legs would give way, so that she would fall to the ground, while at the same time she would have a queer feeling in the precordial region, and would often become slightly confused and almost lose consciousness for a moment. Sometimes, indeed, as she thinks, she entirely loses consciousness under the conditions mentioned above; but she never has convulsions and never bites her tongue. These attacks do not occur at night nor when she is sitting at the table.

This tendency to fall, when startled, has been present ever since she was fourteen years old. At one period she would fall eight to ten times a day. At this time she had a "numbness" of the left hand and arm, and for a time suffered from vomiting. In one of her seizures she let a kettle of hot water fall out of her hand and scalded herself

badly, and even now she often bruises herself severely in falling. In connection with these attacks she has such a sense of uncertainty and fear that, as she walks about the room or goes over the stairs, she steadies herself with her hand, just as a healthy person might who was climbing over a dangerous place. She seems fairly intelligent, but says that she flies easily into a passion, and then is apt to throw things at her husband. She suffers from recurrent dreams of unpleasant character, especially if at all tired; and this she is very apt to be, as she has but little endurance. Sometimes this sense of fatigue comes in apparently causeless waves, which are dispelled by pleasant or engrossing occupations. She is constipated, but the appetite and digestion are good. The menstruation is normal, but she has had neither children nor miscarriages.

She was a nervous child; and, when seven years old, after an attack of scarlet fever, she lay in bed for a year, "unable to move hand or foot." When seventeen, she was extremely anæmic.

The physical examination shows that the knee-jerks are very lively, and associated with a nervous jerking of the whole body, and that the middle finger of the left hand is analgesic, so that a pin can be thrust through the skin without her minding it. It is indeed probable that the whole left side is slightly deficient in sensibility.

The thoracic and abdominal organs are in a healthy state, so far as can be determined without a pelvic examination.

Her mother is said to have had a similar fear of falling and to have suffered from migraine, and her sister died of consumption.

CLIV.

Constant Involuntary Movements affecting all the External Muscles of the Body, beginning in Infancy and remaining without Material Change through Life.

An infant, previously strong and vigorous, was seized, when nine months old, with symptoms for which no cause could be assigned. He screamed all night, and in the morning appeared prostrated and helpless, though not absolutely paralyzed. As he regained strength, it was found that his movements had become unsteady and awkward; and, as time went on, this tendency became more striking. The character of these disordered movements could be best studied when the child was old enough to walk and talk a little, and they were then of the following sort: —

When he tried to sit still, or lay reclining, nothing more would be seen than that the face was the seat of grimaces of varying kinds, and that the limbs could not be entirely restrained from twisting and moving slowly in various directions. When he tried to speak or to execute any voluntary motion, these grimaces and contortions became greatly exaggerated. The involuntary motions were not quick and shifting, like those of true chorea, but always rather slow and strong, suggesting a pulling of the limb in one or another direction by some outside force. The muscles of the face and tongue were so strongly affected that his speech was almost unintelligible, and the finer movements of the limbs were likewise impossible. When he walked, the legs were carried stiffly, yet with steps of varying length, as if he was executing a sort of dance. The sensibility was wholly unaffected. The general nutrition was perfect; and the mental condition was excellent except perhaps for a slight irritability, though the child often passed for an imbecile because he found so much difficulty in making himself understood.

Years of persistent training improved his condition to a moderate degree; and, as he grew up, he became an intelli-

gent and useful member of society in spite of his defects of motion and speech. In the attempts to overcome the disorderly movements there was a strong instinctive tendency to throw the limbs into positions of complete extension or flexion, in which they could be maintained by a gross use of force without the necessity of balancing the antagonistic muscles. This assumption of fixed positions might have led to deformities, had not constant exercise been used to prevent muscular contractions.

The interest of this case may be increased by reference to another in which this instinctive tendency to prevent disorderly movements by fixing the limb in a definite position by powerful muscular spasm had gone so far as almost to prevent motion altogether. This patient, who when seen was a young lady of eighteen, was wholly unable to help herself or to make use of articulate language. She was, in fact, almost confined, by her contracted yet heaving muscles, to a position of complete extension on a couch, and was unable to make her wants known except by inarticulate sounds which her attendant had learned to understand. It might almost be said that she had practically no voluntary control, except over the eyes and, to a limited degree, the head.

CLV.

Double Athetosis.

This patient was a little boy, who at the time of his death was eight years old. The symptoms of his disease had been present in some measure ever since birth, and consisted in mobile spasm, essentially like that described in case CLIV.

He had been unable to stand alone without support, and generally kept the head thrown back and the mouth wide open, though without drooling. Besides this, he had suffered from time to time with convulsions, and was not neat in his personal habits. His intelligence was apparently a good deal impaired.

The father of this child had had a syphilitic infection at one period, and the mother had had three miscarriages after the birth of this child, two of them being at two and a half months, and one at three months. Two other children had also been born, one of whom died with diphtheria, while the other is living and well.

The child whose case is thus briefly reported died of an intercurrent affection; and an examination was made five hours afterward with the result that no gross changes of any sort were found either in the bones, membranes, or any part of the brain, pons, or medulla, unless, indeed, an unusual degree of paleness may be considered abnormal. The specimen was unfortunately lost before microscopic examination could be made; but a most careful dissection had failed to reveal any abnormality either of the convolutions, cortex, blood-vessels, or any portion of the brain substance.

CLVI.

Weakness from Birth, Convulsions; Increasing Rigidity of the Legs.

This patient is a child, five years old. He has two older brothers and a younger sister, all normal and healthy children. His mother had never had any miscarriages. He was born without the use of instruments, after a natural and easy labor. His mother noticed, shortly after birth, that his head was small, and that he did not move his arms and legs around as her other children had done.

At the age of eight months he had a general convulsion, lasting ten minutes, and this was followed at irregular intervals by many more. Sometimes he would have none for two or three weeks, and sometimes they would come every day for a week or more. On one occasion the convulsive movements lasted for two hours continuously.

When he was two years old, his legs, which had been growing rigid for some time, began to be drawn up and held more and more tightly together, until they became crossed.

CASE CLVI.

Physical Examination.— The appearance of the child is that of a ten or twelve months old baby. He lies on his back, rolling his head from side to side, and occasionally arching the back and retracting the head, in a way that suggests the opisthotonus of tetanus. This is associated with wrinkling of the forehead and drawing up of the corners of the mouth.

He pays very little heed to his surroundings; but, if a watch is held in front of him, he appears to notice it for a moment. Flies crawl over his face and gather around the margins of his eyelids, but he does not seem to be disturbed by them.

The head is small, the bi-temporal diameter being markedly diminished.

The hair is sparse and fine, and grows low down on the forehead. The ears are rather large and shell-like, and stand out from the head. The eyes are expressionless, and are occasionally pulled sharply to the right or left or rolled upward; and, while in these positions, they make coarse, jerky movements. The pupils are equal, and react to light. Moderate strabismus is present.

The mouth is held open most of the time, and saliva drools from the corners.

The palate is very high and rather broad. The two middle incisors of the upper jaw are large; and this is the more noticeable from the fact that the adjacent lateral incisors are hardly visible, suggesting teeth just coming. The other teeth are even and rather small.

The body is emaciated, all the ribs being prominent, and the abdomen markedly retracted. The examination of the viscera reveals nothing abnormal.

The arms are spastic, and are held close to the body, flexed at the elbow. The right hand is flexed at the wrist with extended fingers, while the left hand is extended at the wrist with flexed fingers. Both hands are cold; and the skin is blue, mottled, and glossy.

The right leg is crossed over the left, at about the middle of the thighs. Both legs are spastic, with marked wasting of all the muscles. The toes are held in a position of plantar flexion. The skin of the feet, like that of the hands, is blue, cold, and glossy.

The movements of both arms and legs are very limited.

The knee-jerks are normal, the plantar reflexes absent. There is no Babinsky reflex, and no clonus.

The child's nurse says he is fed only with difficulty. He does not open the mouth when food is offered; and it is necessary to hold the jaws apart by force, and put the nourishment into the mouth before the patient makes any effort to eat.

CLVII.

Morbid Ideas.

This is the case of a married woman of forty-five, who came recently for advice on account of very distressing morbid ideas from which she cannot free herself by any effort of the will. They take many forms, but the principal one is a haunting dread of some contamination which she fears will reach her through her food or by contact with some contaminating substance. For this reason she washes her hands over and over again, many times a day, each time finding some morbid reason for doing it, which she realizes to be ridiculous.

The origin of the trouble seems to have been twofold. In the first place, as a child, she was inclined to brood over slight troubles, and was always fastidious about matters of personal cleanliness. Then, twenty years ago, just after her first child was born, her husband came in one day and said he had been bitten by a dog. The idea of hydrophobia immediately became strongly implanted in her mind, and the more so because she had always been afraid of dogs, and because, unfortunately, she had read some newspaper story of a laundress who was said to have been inoculated with

that disease through washing the clothes of a hydrophobic patient. For many years she was nearly free from these tormenting thoughts; but two or three months ago they took hold of her with renewed force, and now she can hardly eat or sleep, especially if she is alone.

There is a continual feeling about her face as if there was some moisture there which she must wipe away; but this is obviously not a sensation due to any physical cause, but only an hallucination. If any one who sits opposite her in a car happens to be reading a paper and gives it a shake, she immediately becomes extremely nervous lest in this way the infection shall have been transmitted to her clothes or shoes.

Her bodily health is good in all respects except that through worry and loss of sleep and food she has become a little thin and pale.

Careful treatment by systematic encouragement and suggestion have failed to give her relief, except sometimes for brief periods. It has been necessary to provide constant companionship for her, and she has been advised to enter a suitable hospital.

Her father and sisters are persons of neuropathic temperament.

CLVIII.

Syphilitic Infection, followed by Symptoms of very General Character.

In December, 1894, a gentleman was sent to me by another physician with the history that in 1890 he had had a chancre followed by mucous patches in the mouth and perhaps a loss of hair. He was under treatment and observation, at that time, for two years and a half, during which period nothing further developed. Moreover, since that time he has been under the care of several different physicians, all of whom have given him anti-specific treatment of one or another sort.

At the time of his examination he was complaining of a

variety of nervous symptoms, such as inability to sleep, dull pains in the back of the head and the back, sense of coldness in the arms, especially the left, numbness and prickling in the right leg and foot, and dizziness.

Careful physical examination failed to reveal anything abnormal, though the patient looked pale and distressed. These examinations were repeated at frequent intervals during the next few years, and always with the same result. The pupils, the knee-jerks, and the handwriting were all normal; and examination of the heart, arteries, and eye-grounds gave negative findings. Yet the patient grew more and more nervous, and came back, year after year, in the same anxiety and with the same symptoms.

CLIX.

Morbid Fears.

This patient is a man of forty-five, English by birth and a carpenter by trade. Although a strong man and able to do a hard day's work without fatigue, he suffers greatly from a sense of fear when in a crowd, as at church or in a crowded car or store. This feeling of fear is not only a mental distress, but is accompanied by rapid beating of the heart, and a sense of "goneness" referred to the epigastrium, which becomes so intense that he fears that he shall actually faint. He has also been troubled lately with profuse perspirations at night, coming on without apparent cause. He has had these symptons for many years; and, indeed, even as a boy he used to faint away on slight provocation, as at the sight of blood.

When quite a small lad, he was knocked down by a man, who struck him a heavy blow on the back of the head. He was carried home unconscious, and this was always thought by his family to have been the cause of his present condition.

Four years ago he had an attack of dizziness on getting out of bed, and lost consciousness.

Physical examination showed this patient to be a strong, vigorous-looking man, though bearing the signs of worry and anxiety. It is interesting to note that he is one of a family of ten children, most of whom were and are strong and well. One brother, however, drank heavily, and died in an asylum. Except for this he declared that there was no neurotic predisposition. His father and mother were both vigorous people.

CLX.

Paralysis of Eye Muscles; Mental Failure. Death.

A gentleman of forty-five, unmarried, presented himself in October, 1887, mainly on account of double vision, due obviously to paresis of the external recti muscles of the left eye, and also of slight dizziness. There was no headache nor vomiting. His speech had become slightly thick, suggesting that of a person under the influence of alcohol; and in the course of conversation he misused words to some extent, though this he had not himself noticed. He characterized his speech defect by saying that his tongue "seemed to get in his way," and said that he had noticed this for some months past. The motions of the tongue were rather slow, and were associated with coarse tremor. There was also slight paresis of the lips. The pupils responded fairly to light, but not at all or but slightly with efforts of accommodation. The knee-jerks were less than usual, and the left was less than the right. The fundus of the eye on either side was normal. There was no tremor of the hands, and in the earlier visits no mental defect was detected. He gave, however, the history of specific infection twelve years before, not followed by skin eruptions, and was consequently given K I in increasing doses, and later Unguentum Hydrarg. Under this treatment the paralysis of the eye muscles steadily improved, and the double vision passed away. His speech defect also became less; but it was at the same time noticed that he stumbled over his alphabet

and left out letters, and that he left off before arriving at the end. He kept on with his business, but a letter written on Jan. 11, 1888, showed defects in spelling analogous to those observed in speech; that is, some letters were left out and others misplaced, and the hand-writing looked careless.

The subsequent history of the case will be given at the time of the discussion.

CLXI.

Cerebral Symptoms of Acute Onset, indicating rather Widespread Disturbance.

The patient was a man of forty-one. When he was first seen, he appeared very ill; and his friends gave the following account of his sickness: —

For five months past he had not been thoroughly well. There had been no symptoms, at first, of any localized disorder; but he had felt "mean" and disinclined for business, and with more or less headache. After three months of this the headache began suddenly to be very intense. The pain was referred to the forehead over the left eye, and extended over the left side of the head, especially around the ear. There was no fever, but a few days later the temperature was 100° F. On the third day his speech became uncertain and objects were miscalled. The next day he was found to have an imperfect use of the right side of the face, as shown by the fact that, when he put out the tongue, the naso-labial fold of the left side became more prominent, while that of the right side was partly obliterated. This was followed a few days later by double vision, due to a trifling defect of some of the ocular muscles.

An examination made a few days after this showed that, while he would sometimes answer questions accurately and with quite a long sentence, yet, on the whole, his speech showed marked defect and indicated confusion of mind. Thus, on one occasion when the doctor handed him a pin, he put it into his mouth as if it was a thermometer.

His writing was confused, like his speech. The headache continued severe; and there was also slight fever, but no more than one to two degrees (taken in the mouth). The right hand and arm became slightly weak, and there was slight drooping of the left eyelid. The knee-jerks were diminished, but variable; and a slight Babinsky reflex could occasionally be made out on the right side. An ophthalmoscopic examination showed a moderate degree of papillitis. The urine showed no traces of albumen or sugar. The pupils were responsive to light. The pulse was 24 at the first examination, and not especially tense. He admitted venereal exposure, but denied all knowledge of infection. There had, however, been urethritis five or six years before, for which he was unable to account. He had no children, but his wife had had one miscarriage.

The treatment which was instituted in accordance with the diagnosis that was made seemed to be of great benefit, so that he improved rather rapidly, and in the course of two months he was nearly restored to health and the papillitis had disappeared.

Although this patient had never been absolutely unconscious, yet on his recovery he found it impossible to remember anything that had happened during the two weeks of his most serious symptoms.

Three months after his apparent recovery he had two epileptiform seizures, although the treatment which had benefited him at first had been continued ever since with more or less regularity.

CLXII.

Symptoms suggesting General Paralysis in a Patient with Tumor of the Corpus Cullosum.

This case is that of a gentleman of fifty, with a good record as regards health and mental vigor, except that he had been somewhat liable to "faint turns," when slightly ill from any cause. Three or four years before his first

visit he had fallen to the ground in such an attack, which was brought on perhaps by diarrhœa.

He presented himself on the 5th of August, 1898, and then stated that he had considered himself well up to the middle of June of the same year, when he was taken down with what he called "nervous prostration." He had done business up to June 29; but his wife stated, in response to close inquiry, that he had been "rather nervous" for two or three years, and more irritable than formerly. These symptoms had been worse for some months, and had been associated with a vague sense of pressure in the head and eyes, and an unusual inclination to lie down and rest. On one occasion he had had a "numbness" of the right leg, which lasted a day or two and then passed away. This had come on suddenly, but was not attended with loss of consciousness. It also appeared that his mental characteristics had gradually undergone a certain amount of change, of a kind which suggested the possible onset of general paresis. For the past six months he had felt no inclination for recreation of any sort. Letter-writing had become difficult; and he frequently repeated himself both in speech and on paper, and occasionally left out words. Throughout the spring he had been troubled about sleeping; and partly on this account, partly because he found it more and more difficult to work, he had been persuaded to go on a trip to the Rangeley Lakes. There he at first improved; but after a few weeks his right hand became paretic and at the same time his speech grew somewhat difficult, although, as on the occasion when the leg became numb, there was no apoplectic seizure. His ability to collect his thoughts had continued to fail, and his mind worked slowly. Both legs had become somewhat weak, but it was the right hand that mainly gave him trouble.

On physical examination he was found to be an intelligent-looking man, though but little inclined to take part in the conversation which went on around him, either with

word or expression of the face. His speech was hesitating and stammering in a high degree. He was unable to give the name of the town and country where he had stayed for a long time during the previous month, and made various mistakes in telling the story of his illness. The right hand and right side of the face were paretic, the tongue and lips trembled. The knee-jerks were normal, and the pupils were equal and reacted well to light. The tongue was coated, the bodily temperature normal, the heart's action normal. In spite of the awkwardness of the right hand he was able to write clearly and fairly well, but omitted letters here and there,—a sign which seemed to bear out the notion of a diffuse degeneration of the brain cortex. Ophthalmoscopic examination failed at that time to reveal any sign of optic neuritis.

The patient was not seen again until about two months later, and by that time a marked change had taken place in his condition. He was then suffering from unmistakable signs of brain tumor,—headache, nausea, vomiting, optic neuritis,—and besides this the speech had become slower and more hesitating, and the difficulty in the use of the right hand had increased. There was also an awkwardness of both legs, so that he toppled over twice in going upstairs. The memory was considerably impaired. The knee-jerks were now exaggerated.

With a view to at least mitigating the effects of pressure the patient was advised to enter the Massachusetts General Hospital for operation. Here he came under the care of Dr. J. C. Warren, who on November 8, made a large trephine opening on the left side over the Rolandic area, but without opening the dura, which was, however, found to be very tense. The operation was done under chloroform, but in spite of this precaution the shock was so great that for several hours it seemed probable that the patient would die. After the effects of this shock had passed away, slight improvement began to show itself, both as regards the general symptoms, the speech, and the use of the limbs.

This improvement did not go very far, however; and after lingering for two months, practically unable to speak or to help himself, though not actually paralyzed, and in a condition of considerable mental dulness or apathy but without pain or coma, the patient died.

At the autopsy a deep-seated tumor was found, which impinged upon the corpus callosum in its whole length, and was almost confined to that body in its posterior half.

The tumor was of gliomatous character.

The point of special interest in this case is the early appearance of slight changes in character and slight impairment of mental power and of memory, coming at a time when neither signs of focal lesions nor of general pressure had shown themselves.

The very early occurrence of isolated epileptic seizures several years before is also noteworthy, because, although it is not easy to explain them, the histories of several other cases report similar incidents.

The paralysis, when it did appear, must evidently have been due to pressure, for which there was abundant cause.

CLXIII.

Attack of Epileptic Character, terminating rather unexpectedly by Rapid Improvement and Recovery.

I was called one day to see a patient whose name and history were unknown to me, with the request to come in haste, as he had had a serious apoplectic attack. On reaching the house, I found a middle-aged man, apparently wholly unconscious, perspiring freely, and breathing rapidly and heavily, his face red and his cheeks puffing out and in at each breath. The limbs were all relaxed, right and left alike; but, as the notes are given from memory, I cannot now say whether the cremaster and plantar reflexes of the two sides were different, nor whether the knee-jerks were present or absent. The temperature was moderately elevated, and the skin hot and flushed.

His condition looked very serious; but, in view of the congested condition of the skin, I ordered six leeches, to be applied on the temples. This was done, and seemed to bring great relief. At any rate, when I made my visit the next morning, I found him, to my surprise, practically well, with but few traces of his violent symptoms of the day before. I then made further inquiry into his previous history, and found that his memory and mental powers, and also his mental balance, had been failing for some time past, and that a number of years previously he had had signs of syphilitic infection.

CLXIV.

Blueness of Fingers, with Gangrene.

A woman thirty-seven years old had been through a severe attack of diphtheria at the age of twenty-seven. A few weeks after her recovery from this, she began to notice that the fingers of both her hands would become blue and cold whenever she became excited. This trouble has persisted ever since with no change, except that it is more easily brought on than formerly. She says that her fingers become cold and blue, and feel perfectly lifeless if a friend comes in to call, and lately this same tendency has manifested itself in her toes.

She would not have sought advice for these symptoms, however, were it not for the fact that during the past week the end of the right index finger has become gangrenous.

Examination of the hands shows all the fingers to be very cold, while the skin is blue and turgid. This condition is so marked that it seems almost impossible that it could be a temporary one.

The fingers are held in a half-flexed position, and the patient is unable to fully flex or extend them, though she says she can do so when she is alone, and the fingers in a more natural state. The terminal phalanx of the right index finger is gangrenous.

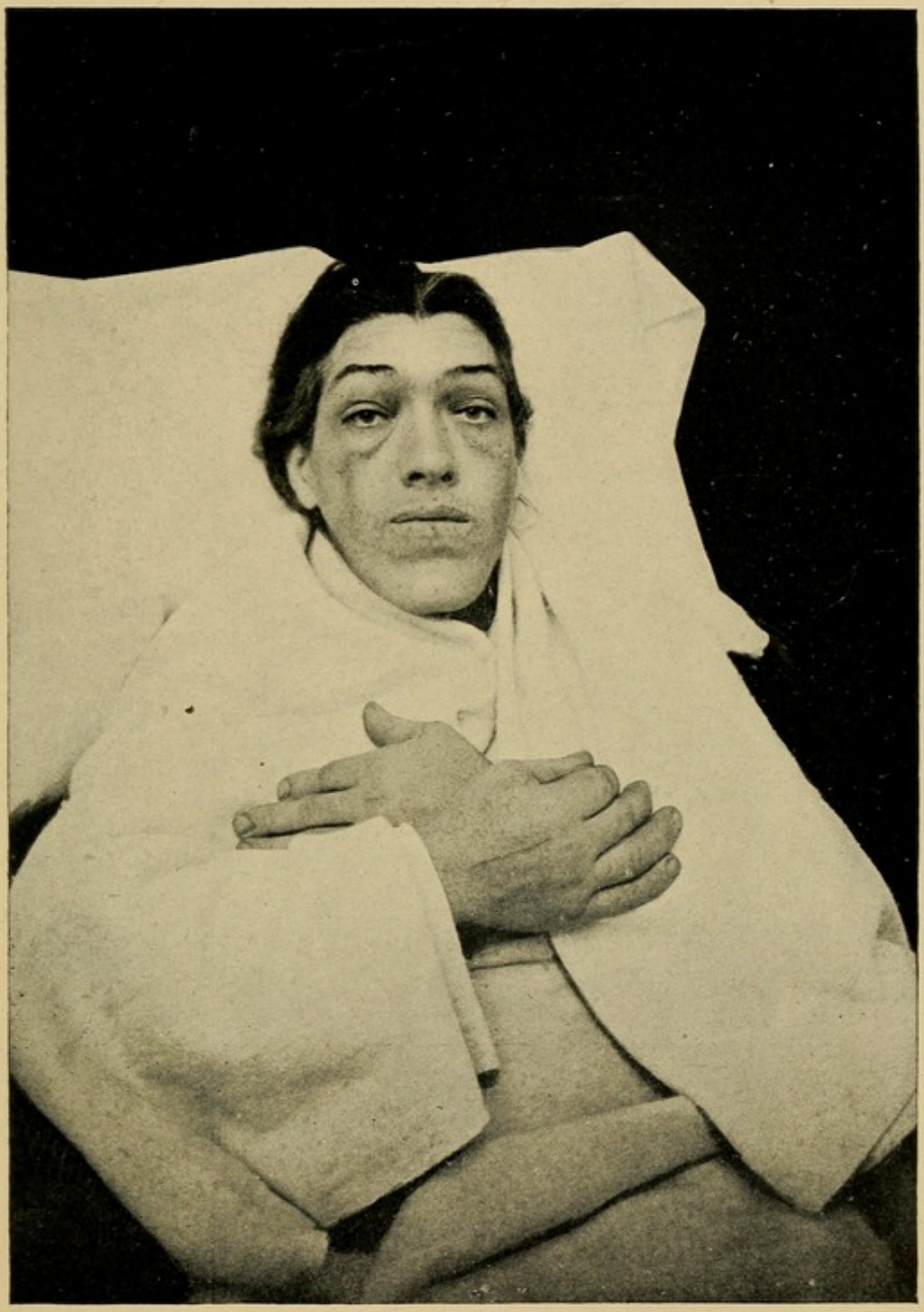
The tension in the radial arteries is normal, as taken by a tonometer.

The knee-jerks are very lively, though there is no ankle-clonus.

CLXV.

Pain in the Hand and Arm, with Trophic and Vascular Changes in the Fingers.

A lady of thirty-five, unmarried, came complaining of pain in the right arm, of one year's standing, and accompanied with great weakness. This had begun a year before, in December. It had been first felt in the shoulder, and had then spread through the arm and into the fingers,— especially the first two fingers and the thumb,— and also into the pectoral area. Movements increased the pain. The fact of special interest in the case had, however, been the occurrence of vaso-motor signs of striking character. Near the beginning of the attack the forefinger and middle finger, and, to a less degree, the third and fourth fingers, became white and cold, and remained so for several months. As the circulation became more normal, the pain in the fingers grew intense. The epidermis also became altered and thickened, and the whole hand swelled and was at times burning hot. The ends of one or more fingers became purplish, suggesting the onset of gangrene. The muscular strength of the fingers became greatly impaired. The whole hand and arm were often the seat of tingling sensations, and this could be brought on at any time by pressure above the clavicle. Inquiry into the patient's previous history showed that she had been anæmic, and that many years before she had had a cough which lasted a year. Inquiry into the family history showed a lack of vigor, the frequent occurrence of catarrhal affections, and on the maternal side a strong tendency to tuberculosis.



Case CLXVI.

CLXVI.

Hypertrophy of the Head, Face, and Extremities.

This patient is a single American woman, forty years old, who had had no illness since childhood. The catamenia stopped at the age of thirty, and did not return until two months ago. Three years ago she had severe frontal headache, most of the time during a period of six months. Two years ago she had some pain in both hips, extending, later, down the legs, and this pain was aggravated by walking.

About a year ago she noticed that her face was growing large, especially about the forehead and lower jaw; and it has continued to grow larger ever since. Nine months ago her feet began to increase in size, and in the past few months she has had difficulty in going about on account of weakness of the legs. It has been impossible lately for her to get shoes large enough for her feet without having them specially made. She has felt well except for general weakness and aching pains in both shoulders, sometimes radiating down the arms; but the weakness has prevented her from doing her customary housework during the past few weeks.

Examination shows the head to be large and the face massive, the lower jaw and supra-orbital ridges being markedly hypertrophied, while the malar bones, instead of being prominent, seem rather to be depressed. The tongue is large and smooth. The pupils are equal, and react to light, and examination of the fundus of the eyes shows nothing abnormal. There is no evidence of disturbance of the cranial nerves. The bones and soft tissues of the hands and feet are much hypertrophied. The knee-jerks are equal. Motion at the hip and shoulder joints is limited, and accompanied with a peculiar crepitus. The thyroid gland is not palpable. For several months past there has been no apparent change in the condition of the face, but she has had an occasional return of her old headaches.

Examination of the blood and urine showed nothing abnormal. The subsequent history has not been learned.

CLXVII.

Deep, Indolent Ulcer of the Toe.

A woman forty-nine years of age had an attack of "rheumatism" affecting both legs when she was thirty-seven. The pains were severe and hard to bear, but did not keep her in bed; and she does not remember that the joints were red or swollen. Ever since this attack she has been subject to spells of sharp shooting pains in the legs and back, which last a few days at a time, returning at intervals of several weeks.

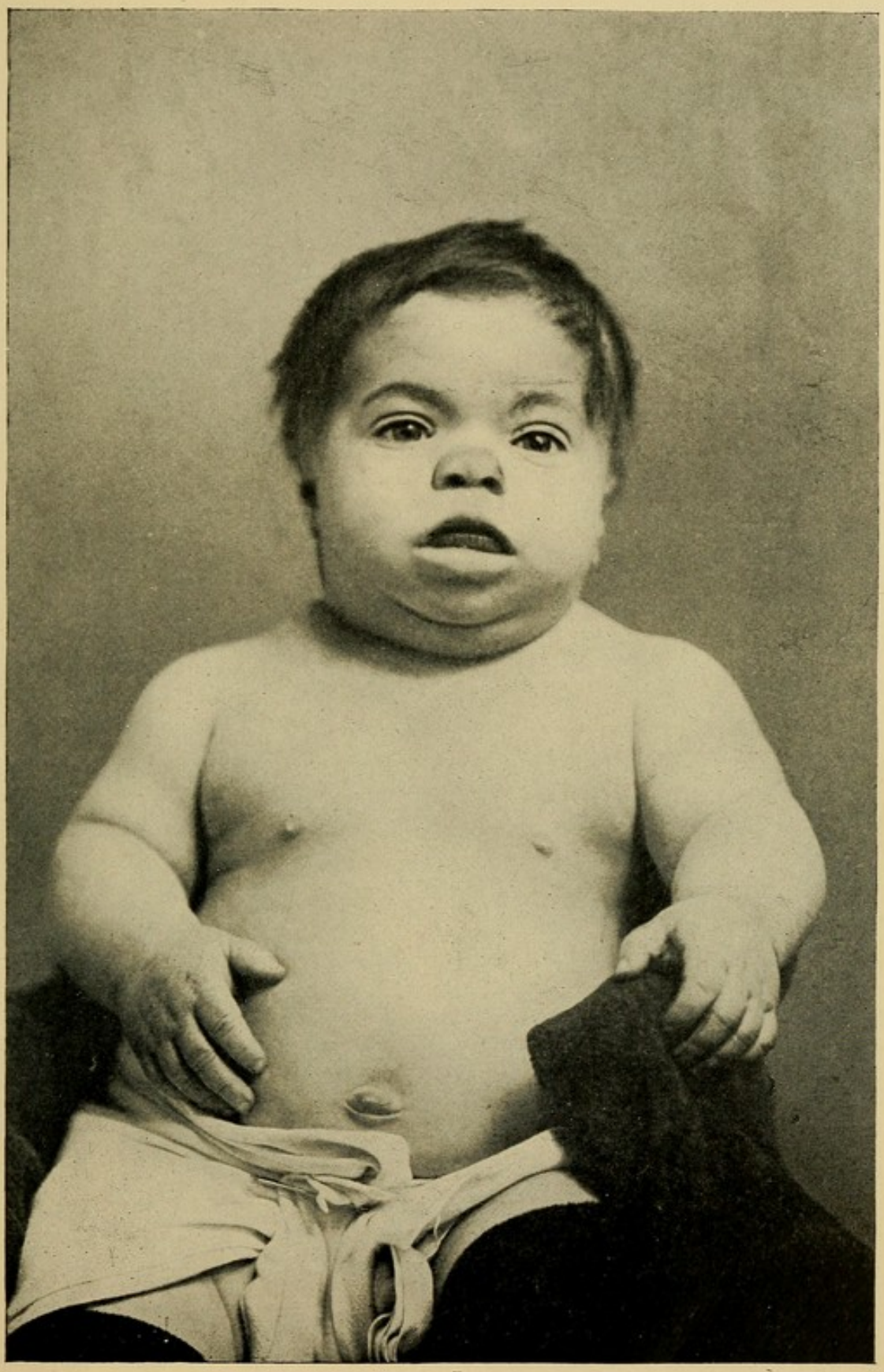
Aside from these attacks she has felt perfectly well ever since she can remember. She has never had any children nor miscarriages, though she has been married over twenty years.

The patient now seeks medical advice regarding a sore on the ball of the left big toe, which has troubled her now for eight months. It does not pain her especially, but will not heal under the various methods of treatment she has pursued.

Examination shows the skin of the whole left foot to be cool and blue, especially the big toe; and, in addition, this toe shows a dry ulcer, the size of a dime, on the under surface. The walking is not much interfered with, the gait being steady, and with only a slight limp.

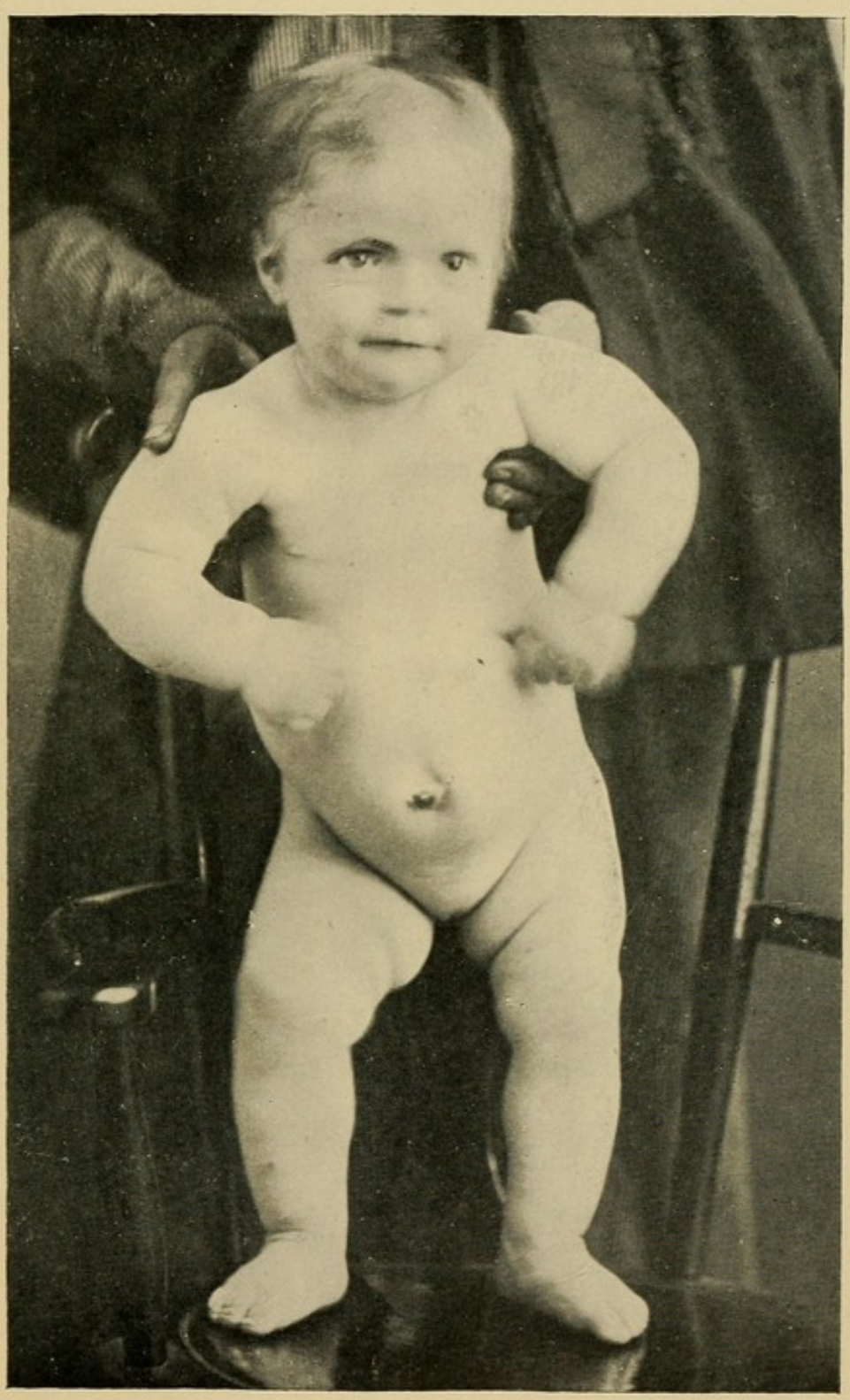
The knee-jerk is normal on the left side, but very slight on the right.

The right pupil is larger than the left, and both are irregular in outline, while the reaction to light is slow in both and of diminished amplitude.



CASE CLXVIII.

(No. 1.)



CASE CLXVIII.

(No. 2.)

Taken six weeks after No. 1, showing result of treatment.

CLXVIII.

Peculiar Abnormality of Development. Improvement under Treatment.

The patient is a girl five years old. On account of peculiar circumstances nothing of her family history or previous symptoms could be obtained. It was learned, however, that during the past two or three years there had been no noticeable physical nor mental development. She is unable to walk or talk, but is always good-natured and smiling. She takes notice of bright objects held before her, but does not play with toys. She has never learned to make known her desire to micturate or defecate.

Examination shows a child with marked pallor of the mucous membranes. The skin is dry and waxy; the hair is thin and dry and falls easily. The head is large, and the face is full.

The features suggest that the child is a boy rather than a girl. The mouth is held open, and the broad and thick tongue protrudes from it most of the time, though it is often withdrawn. The nose is broad and flat. The head is thrown back, and the breathing is noisy, as if in consequence of a severe cold in the head. There are large masses of fat about the eyes, neck, and shoulders, and marked pads of fat are seen above the clavicles. The thyroid gland is not palpable.

The child is able to stand if she supports herself by a chair; and in this position the legs are abducted and the feet turned outward, so that the knees point in almost opposite directions. The legs seem short in comparison with the body, which gives the latter an impression of undue length. The thighs are covered with thick masses and folds of fat.

The heart examination shows a loud systolic murmur over the whole precordia, loudest over the pulmonic area, and transmitted far into the axilla. The pulmonic second is

accentuated. There is no evidence of cardiac enlargement. The blood contains 25 per cent. Hgb., 2,500,000 reds and 11,000 whites. A differential count shows nothing abnormal, more than is compatible with the anæmia.

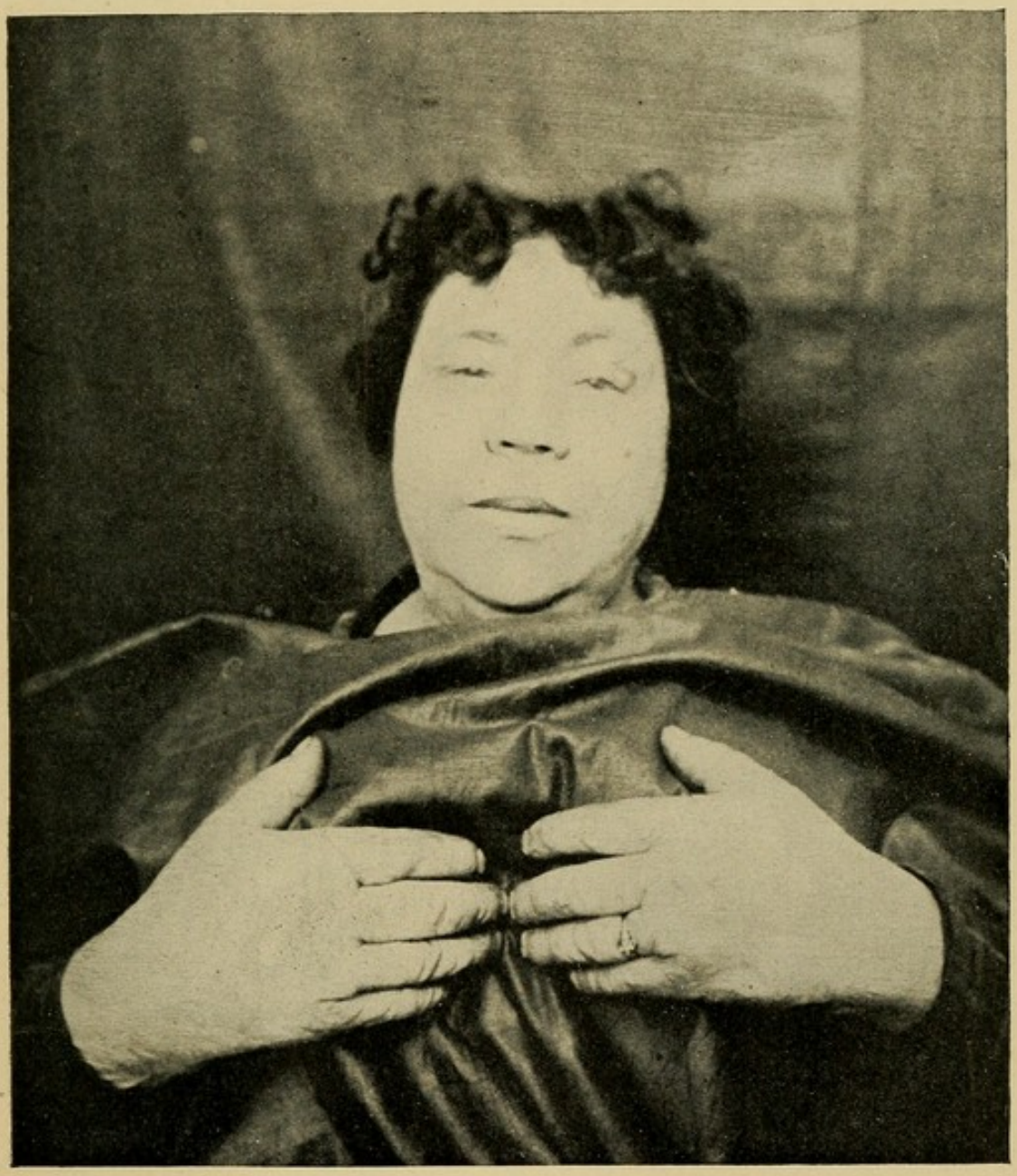
Marked improvement resulted from treatment, as is shown by the photographs, the second one having been taken six weeks after the first.

CLXIX.

Debility, with a Peculiar Change in Nutrition, coming on at the Period of the Menopause.

A fortune-teller and "healer of diseases," about sixty years old, had passed through her menopause at the age of forty-five. In her early life she had always been active and vigorous, though her brother and sister had died of phthisis, and her father and mother of some pulmonary disease. At the time that her catamenia ceased she became nervous and irritable, and was subject to "hot flashes" over the body and in the head. After these symptoms had lasted two or three years, she began to grow listless, lost her ambition, and felt a constant sense of fatigue. These feelings of listlessness grew worse and worse, and finally became so bad that for five years past she sits alone in her room all the day through, and does not care to go out to see her friends, though she is glad to have them visit her. She says she likes to be alone and "commune with the spirits." Sometimes she sits a long time before she can make up her mind to cross the room, even for something she may wish for very much. She has recently been troubled by palpitation and shortness of breath on exertion.

She says she has been growing fatter during the past ten years, and thinks that her face shows it more than her body. Her memory has also been gradually failing. The patient was formerly a singer, and was said to have a beautiful voice; but now it has grown coarse and harsh, and after she has talked ten or fifteen minutes, something seems to



Case CLXIX.

Case CLXIX.

Case CLXX.

close in her throat, so that she is unable to speak aloud. Cold weather is much harder to bear than hot; and even in summer she often sits near the stove all day, trying to keep warm.

The patient is a large woman. The face is full, and the lines of expression seem to be obliterated by an œdematous appearance, but there is no pitting on pressure. The hair is sparse and coarse, and comes out easily. The skin of the face and body feels dry and hard. The pupils are equal, and react normally. The tongue is large and moist, and the teeth poor. The voice is deep, and has a rasping quality, while the speech is slow and measured. There are well-marked pads of fat above the clavicles. The axillary hair is wanting. The hands are large, and have the appearance of being very œdematous, though here, too, there is no pitting. The heart examination shows a characteristic functional murmur in the pulmonic area. The patellar reflexes are normal. The thyroid gland is not palpable. Examination of the blood shows moderate anæmia. The urine is normal.

CLXX.

Backward Mental and Physical Development. Numerous Stigmata of Degeneration.

This case is given to be contrasted with No. CLXVIII.

The patient is a child of five years, of Italian parents. He has a sister, seven years old, who is undeveloped and has never learned to talk. Two younger brothers are normal and healthy children.

He has never shown any signs of intelligence since birth; and the mother says he is always cross and irritable, and cries most of the time.

The back is covered by a profuse growth of long fine hair. The head is peculiar in shape, as seen in the illustration, there being no frontal development, so that a straight line can be drawn from the tip of the nose nearly to the ver-

tex. There is marked internal strabismus of the left eye. The ears and mouth are large, and the palate high and narrow.

The body, which is very dirty, emanates a strong odor, suggesting the atmosphere of a menagerie.