

Fig. 266), and complete flexion, to an acute angle (as seen in Fig. 267), both motions being the result of the voluntary contractions



FIG. 267.

of his own muscles without mechanical aid. (Figs. 266 and 267 are from photographs by O'Neil.)

## LECTURE XXIX.

### VARIOUS DEFORMITIES NOT DESCRIBED IN PREVIOUS LECTURES.

Deformity accompanying Facial Paralysis.—Torticollis.—Disease of the Wrist-Joint.—Causes.—Treatment.—Method of making Extension and Counter-Extension at the Wrist-Joint.—Case.—Wrist-Drop.—Causes of the Paralysis that gives Rise to the Deformity.—Why it gives Rise to this Peculiar Deformity.—Symptoms.—Treatment.

GENTLEMEN: I invite your attention this morning first to the deformity which accompanies facial paralysis.

The deformity which accompanies paralysis of the facial nerve is due to more or less complete loss of muscular power in those

muscles to which the nerve is distributed. The causes of paralysis of this nerve have been so fully explained in text-books, and the peculiarities of the deformity are so well understood, that but little time need be spent in their consideration. The most common cause of this paralysis, perhaps, is direct exposure to cold, such as comes from a current of cold air striking directly upon the side of the face. The deformity consists in a drawing of the mouth toward the unaffected side; the patient is unable to whistle or laugh properly; the angle of the mouth upon the affected side is lower than normal, and the eye upon the same side can be only incompletely closed.

The deformity not infrequently becomes permanent.

In many cases, however, so far as the cheek is concerned, it can be relieved in a very simple manner.

The principle is to approximate the origin and insertion of all the muscles affected.

This can be done by bending a hook upon the end of a piece of silver wire, and hooking it into the angle of the mouth, and then fastening the other extremity by bending it around the ear, as suggested by Dr. Detmold. The ear will yield somewhat, which may be sufficient to afford all the relaxation desired; but, if it is insufficient, a piece of elastic can be used, with a piece of wire attached at each extremity. When the muscles are supported in this manner, galvanism can be applied with benefit, for the muscles are then able to contract without carrying any weight.

This is a rule that should never be violated, when applying galvanism or electricity to paralyzed muscles.

TORTICOLLIS, OR WRY-NECK.—This deformity is of quite common occurrence. It may be congenital or acquired. When acquired, it may depend either upon abnormal muscular contraction or upon muscular paralysis. The muscle chiefly involved is the sterno-cleido mastoid. When either one of these muscles contracts independently of the other, the head is drawn toward the shoulder of the same side, and rotated so as to carry the face toward the opposite side.

Again, when one of these muscles becomes paralyzed, and the other is permitted to contract without anything to counterbalance it, wry-neck is the usual result.

In this respect, therefore, it is similar to the deformity of

club-foot, and depends upon lack of balance in the contractions of opposing muscles. It may also depend upon permanent contractions of tissue following inflammation. Scrofulous abscess upon the neck may be followed by thickening of all the surrounding tissues and sloughing, and the subsequent contractions attending the process of cicatrization may give rise to wry-neck.

The cicatricial contraction following a burn is not an infrequent cause of wry-neck. The deformity, however, which chiefly interests us is that produced by irregular muscular contractions, due either to paralysis of one sterno-cleido-mastoid muscle or a spastic contraction of the other.

The deformity is frequently established during the process of parturition by undue traction made upon the neck of the child. The head may become caught at the superior strait of the pelvis, and, under such circumstances, undue traction may injure the spinal accessory nerve to such an extent as to give rise to subsequent irregular muscular contraction of the two sets of muscles upon the sides of the neck.

The consequences will be, gradual development of this deformity.

The deformity consists of a peculiar position of the head, that is, a rotation of the head upon its axis caused by the approxi-



FIG. 268.

mation of the origin and insertion of the sterno-cleido-mastoid muscle.

The chin is elevated, and the rotation of the head brings the ear in front of the shoulder upon the affected side, as in the case

now before you. (See Fig. 268.) Ordinarily, the deformity is easily recognized. There are, however, certain conditions with which it may be confounded.

It may be mistaken for fracture of the cervical vertebræ. This fracture is not of common occurrence, but, when it does take place, it is ordinarily fatal, but not necessarily so. If no injury has been done to the spinal cord, it is possible to adjust the fractured bones by means of extension and counter-extension properly applied, and there they may be retained in position by a fixed apparatus, and recovery take place.

It has been my fortune to treat three such cases successfully. The *history* of the two conditions, however, is so entirely different that, with proper care, they should not be confounded.

The most common question you will be called upon to decide is, whether you have to deal with a deformity dependent upon paralysis, or one due to spastic contraction of muscles.

This can be easily determined. If the deformity is of paralytic origin, it can be readily overcome, and the head can be easily restored to its normal position; but, the moment the retaining force is removed, the deformity will return.

If, on the contrary, the deformity is the result of spastic contraction, it cannot be so easily corrected. The rigidity of the muscle will be such as to render it impossible to restore the head to its proper position, unless the deformity is of very recent development.

If it is of recent development the spastic contraction may perhaps be overcome by manipulation, and the head finally restored to its normal position.

Such cases may be permanently relieved, perhaps, by means of elastic force so applied as to constantly make traction upon the head in a direction opposite to that in which it is inclined by the contracting muscle.

When, however, the muscle has become *contractured*, you will not be able to restore the head to its normal position by any manipulation, and when the parts are placed upon the stretch, and the additional *point* pressure made, spasm will be produced which indicates that the contracted tissues must be divided, before the deformity can be overcome.

When tenotomy is necessary, it is better to divide the clavicular and sternal origins of the muscles separately than to make a

single long incision embracing both of them from the same puncture. The clavicular origin can be reached most advantageously about three-fourths of an inch above the upper edge of the clavicle.

The sternal origin of the muscle is more superficial than the clavicular, and can be reached more readily. There is some difference of opinion among operators as to how the operation should be performed. Some prefer to cut the tendon from within outward, while others prefer to cut it from without inward.

My preference is to cut from within outward, and I believe it to be a much safer method than to cut in the opposite direction. The tendons are to be divided in accordance with the rules already laid down, and when divided the head should *at once* be restored to its proper position and retained there.

It is very important that every fibre of the muscle be divided, for, as long as a single fibre of the muscle remains undivided, the deformity cannot be permanently corrected. After the head has been restored to its normal position, it is to be retained by some apparatus.

Here, again, we find that a number of instruments have been



FIG. 269.

devised for overcoming the deformity, but the greater portion of them are entirely unnecessary.

Perhaps, the most simple and efficient apparatus is one that can be made of adhesive plaster and elastic bands. It is made in the following manner: First, place a broad piece of adhesive

plaster across the forehead, to keep your bandage from slipping. To each extremity of this piece of plaster a strip of muslin is attached, which goes around the head and is fastened. To this bandage, passing around the head, an elastic band is attached upon the side opposite the deformity, carried through the axilla, and returned to the place of beginning. Now, this elastic band can be made as short as necessary to retain the head in its normal position, and it keeps a constant traction in the proper direction to turn the head around to its normal position. (See Fig. 269.)

In this case it will be observed that the head is not yet entirely restored to the natural position; but the constant traction will in time accomplish this object. The change in the position of the child's head, by the application of this elastic force, even during the few minutes it has been used, must be apparent to you all.

This apparatus is very efficient for overcoming the deformity in the paralytic variety, or in any case when it can be overcome without the operation of tenotomy.

The principle which should govern you in the treatment of this class of cases is, to supply the deficiency in muscular power by substituting elastic force.

Nearly all the complicated machinery, therefore, which may be seen in the shops for correcting wry-neck, is of no use whatever.

If, however, it is desirable to furnish your patient with a beautiful instrument, you can probably do no better than to use the one devised by Mr. Reynders. (See Fig. 270.)

This apparatus consists of a well-padded pelvic band, *a*, to which an upright steel bar is attached at *b*, passing upward along the spine to the upper dorsal region. A cross-bar, *c*, is attached to its upper end, passing from one axilla to the other, and fastened to two crutches, *k*, fitting well under the arm. These are connected to the pelvic band by two lateral bars, *m*, which by means of a slot and screw can be raised and lowered somewhat, at will. The part of the apparatus so far described is applied firmly to the trunk by means of straps passing over the shoulder and fastened to the axillary cross-bar at *c*. A firm hold of the head is secured by a pad, sheet-steel inside, reaching almost from eye to eye backward around the skull, with apertures for the ears, and fastened to the head by straps over the forehead and under the chin. To its back part a steel bar is riveted, *d*, which connects the upper part

of the apparatus with that applied to the trunk. The lower end of this steel bar is ratched and adjusted in a slide at the upper end of the steel rod, passing up along the spine and held in a desired position by a thumb-screw shown near the letter *h* (on the figure). This connecting bar is intercepted by three different joints, *e*, *f*, and *g*, by which flexion can be made in any direction, when worked with the key. At the joint *g*, flexion can be made to the right or left, at *f* forward and backward, and at *e* rotation.



FIG. 270.

The advantage of this apparatus over many others is, that firstly a firm hold is effected to the head and trunk, and that then the head can be brought in a proper position by a true and irresistible mechanism. The apparatus when worn is almost entirely hidden under the clothing, and patients cannot very easily withdraw themselves from its action.

When the deformity is associated with disease of the cervical vertebrae, as it may be, you will require something more in the way of apparatus than the elastic band and the adhesive plaster.

In such cases the instrument just described answers a most excellent purpose.

Another instrument which is less expensive, and is also very serviceable, consists of a saddle which fits the shoulders accurately, and is secured by means of a body-belt, with an arch over the head from the centre of which is suspended an elastic band to receive the occiput and chin. This apparatus was fully described when we were speaking of caries of the cervical vertebrae.

As adjuvants to any apparatus that may be used, manipulation, friction, and galvanism, will be of great service.

As soon as the sterno-cleido-mastoid muscles can act sufficiently to overcome the deformity without assistance, all apparatus may be removed, but until that time it is important to assist them by means of elastic force.

DISEASE OF THE WRIST-JOINT.—I will next direct your attention to a few points suggested by the case of *disease at the wrist-joint* which is now before us.

This joint is liable to be attacked with the same diseases as other joints, and, when it becomes diseased, should be treated in accordance with the same principles that govern the treatment of other diseased joints.

The following case is offered as an illustration not only of disease but of the manner in which extension and counter-extension may be applied to the wrist-joint.

Some time since this man received a fracture of the forearm. Phlegmonous erysipelas was developed in the limb, and thirteen openings were made to permit the free discharge of pus and serum.

The hand and forearm were œdematous, and pus was burrowing about in several places. The wrist-joint became involved in the inflammation, and the question of amputation was seriously considered. Constitutional disturbance had become well marked.

It was, however, decided to make an effort to save the limb, and the treatment consisted in keeping the openings free for discharge of such material as might be formed, the administration of such constitutional remedies as his case seemed to demand, such as iron, tonics, etc., and the application of extension and counter-extension in the following manner to relieve the constant pain in the joint. In the first place, each finger was bandaged separately. I then took a piece of common sole-leather long enough to reach

from the upper portion of the forearm to the end of the fingers, and about as wide as half the circumference of the limb, dipped it in cold water until it was soft and flexible, and then moulded one end of it to the palm of the hand, and secured it with a roller-bandage; then, as an assistant made extension from the hand and another from the elbow, until the surfaces of the diseased joint were separated and the pain relieved, I brought the remaining portion of the leather splint against the forearm and there secured it by continuing the roller-bandage up over the forearm. The splint was now left in position until it became dry, when it was removed and lined with a strip of adhesive plaster, plaster side out, of the same width as the splint and long enough to go completely around it lengthwise, and lap a couple of inches or more. It was then ready to be reapplied to the limb, and, after the openings had been covered with little pieces of oakum to absorb whatever discharge might take place, it was adjusted in the manner already described, first securing it to the hand, then making extension of the wrist and bringing the plaster against the forearm, and retained there by continuing the bandage over it.

Sole-leather applied in this manner is stiff and unyielding when it becomes dry, and, if afterward it is covered with adhesive plaster, it will keep up perfect extension and counter-extension, thereby relieving the surfaces of the joint from all pressure.

Inflammation of the wrist-joint is not very infrequent, and it is hardly possible to advise a simpler and more effective method for placing the joint perfectly at rest than that which you have just seen in operation in this case.

Since the application of this splint, only one week ago, the cedematous condition then present has nearly disappeared; the discharge has diminished to a very great extent, the constitutional disturbance has passed away, and the question of amputation is no longer to be considered.

WRIST-DROP.—The last deformity to which I shall direct your attention is that commonly known by the name of

*Wrist-drop*.—This deformity consists, as its name implies, in a dropping of the hand, which is an undue flexion, consequent upon paralysis of the extensor muscles of the forearm. The most common cause of paralysis of the extensors of the forearm is lead-poisoning.

When the "lead-palsy," as it is sometimes called, has con-

tinued for some time, atrophy of the muscles is a common result, and in many cases it is very marked.

The opinion is quite common that the lead manifests its poisonous effects alone upon these extensor muscles, but that is not true.

The lead affects the entire system, and the patient has not only wrist-drop, but he has diminished muscular power in all the muscles of the body.

The poisonous effects are manifest in constipation consequent upon paralysis of the muscular coat of the intestine; and also give rise to a peculiar gait in which the patient first strikes the heel, and then brings his weight upon the anterior portion of the foot with a whack. The presence of the blue line along the margin of the gums and the existence of lead in the urine are additional evidences that the entire system is affected.

The more common manifestation, however, of lead-poisoning is paralysis of the extensor muscles of the hand and fingers. The reason for this is, the flexor muscles are the more powerful of the two sets, and resist the influence of the lead longer than the extensors, hence continue to act and produce the deformity after the extensors have become paralyzed.

Those muscles exhibit the effect of the poison first which are the least able to resist its influence.

In some cases paralysis of the extensors is complete, and the patient is unable in the least degree to extend the hand and fingers.

This deformity, incompletely developed, can be seen every day upon the streets of this city, for there is many a fashionable lady who suffers from it in consequence of her own folly. Their hands are held in a peculiar yet fashionable position, a sort of kangaroo style, and many of them fancy that they are imitating the fashion admirably, while they are simply obliged to carry their hands in this position because the extensor muscles are not strong enough to hold them up. The polish they have put on their faces has manifested itself in producing partial paralysis of the extensor muscles of the forearm, and a fashion has been introduced to accommodate the deformity.

The use of "Laird's Bloom of Youth," as a cosmetic, is a very fruitful source of lead-poisoning among women.

I have had three most distressing cases of this character under

my own observation, which were caused by the use of this single article; and yet the manufacturer has dared to use my name upon his advertisements, recommending it as a safe and reliable cosmetic!

The common people, perhaps, are not to blame for their ignorance regarding these articles, but for the medical man there is no excuse for recommending such villainous compounds.

General lead-poisoning is sometimes mistaken for locomotor ataxy.

The following cases illustrate the deformity present in wrist-drop, and the mode of treatment:

CASE.—On the 27th of September, 1868, I was called to see Miss —, of Kansas, who had been sent to me from that State, by Dr. Logan, to be treated for disease of the spine, and paralysis of the forearms.

I found a very tall, beautiful woman of about nineteen, of remarkably large frame, very erect, with both hands dropped at nearly a right angle at the wrists, and perfect inability to extend them. She could not extend the fingers in the least, or extend or abduct either thumb. The muscles were more atrophied, and the forearms and hands more wasted than any case I had at that time ever seen.

The largest circumference of the forearm just below the elbow was eight inches, circumference at wrist five inches. The interosseous spaces on the back of the hand were very distinct, and the adducens, and extensors of the thumbs, as well as all the muscles in the palms of the hands, were so atrophied that the contours of the first metacarpal bones on either side were almost as conspicuous as they would have been in a skeleton, with a tight glove drawn over it.

She was unable to feed herself, comb her hair, pick up a pin, hook or button her dress, or in fact make any movements whatever with her hands, except the *very slightest flexion* of her fingers. She had been in this condition for some months, and was gradually getting worse. She could flex and extend the forearms, and could elevate the arms almost to a right angle with the body; but was perfectly unable to extend the hands or fingers in the least. She could walk tolerably well, but was not very steady or elastic in her step, and easily became exhausted. Going up or down stairs was done with great difficulty, and I observed that,

to sit down, or get up from a very low seat, required all the muscular exertion of which she was capable.

On removing her clothes to examine the spine, I found that she was sustained in the very erect position, which had attracted my attention, by "Taylor's Spinal Supporter," a most valuable apparatus in cases where its use is indicated, and I naturally inferred that she must have been suffering from some disease of the spine. On removing the supporter, which weighed three pounds, her head and trunk immediately bent forward; and with her arms crossed on the chest, the hands dropped at the wrist, at almost an acute angle with the forearms, she presented an exact counterpart of the "Grecian-bend" photograph, which has been so common in the shop-windows for the past year or more.

I examined her spinal column with the greatest possible care, by concussion, compression, extension, bending her forward, backward, laterally, and by rotating the spine upon the pelvis, so as to put every ligament upon extreme tension, and subject every cartilage and bone to firm pressure, without the slightest evidence of pain or inconvenience. I therefore concluded that, if she had ever had Pott's disease of the spine, it was the most perfect cure that I had ever seen.

She gave the following history of herself: That in the summer of 1866 she had bilious intermittent fever for some weeks, which prostrated her very much, and after slight fatigue she had a relapse from which she recovered very slowly. That in September she took a ride on horseback, a distance of ten miles, and on her return the horse ran off, and carried her at great speed nearly a mile. She exerted all her strength to stop him without effect, and was finally compelled to put him into a fence. She was very much exhausted, but did not dismount until she reached home, a distance of some two miles or more. A few days after this great exertion, she found "her hands were getting weak, first discovered it by accidentally dropping a skillet out of her hands at a candy-pulling." She then noticed that a book would frequently drop out of her hands while reading, and that she could not strike the piano-keys correctly, or with as much force as formerly, and that her arms and hands were getting much thinner.

She came to New York to consult me; but, as I was absent

from the city, she was recommended to Dr. C. F. Taylor, to try the Swedish movement-cure. The doctor diagnosed her case as Pott's disease, and applied a spinal supporter. She was very ill for some days at Dr. Taylor's establishment in Broadway, with what the doctor states in his letter to Dr. Logan, of Leavenworth, was spinal osteitis. Dr. Thomas, who saw her at this time in consultation, informs me that he considered her case as one of hysteria.

She was sent home after a few weeks, with the spinal supporter applied, and which she has continued to wear until the present time, having been assured that her hands and arms would soon recover their use, after her back got well. I mention these facts, not in the way of censure, but simply to show the difficulty of diagnosis, and the danger of drawing wrong conclusions, without the most careful observation, for this very case was published in the *Quarterly Journal of Physiological Medicine*, April, 1868, pp. 282, 283, as a case of "carnomania."

Her back seemed to be supported by the brace, and she could walk with her body more erect; but her entire muscular system grew weaker, she could walk only a short distance without great fatigue, and her forearms and hands wasted so rapidly that in a few months she completely lost the power of *extension*, and for the past year had been perfectly helpless, and had to be dressed and fed like a child.

As I could find no evidence of disease in the spinal column, or cord, and no organic lesion of the nervous centres, my diagnosis was that there was no "Pott's disease," but a case of "lead-palsy." The usual blue margin of the gum was not conspicuous, but between each of the teeth the gum was more purple than natural.

I made most careful inquiry to ascertain the source of the lead, but was not successful. They had no lead pipes in the house to contaminate the water drunk, but took it from a spring in wooden buckets, had used no lead in painting the house, had drunk nothing from lead pipes, or been exposed to its influence in any way that I could ascertain, even after the most careful inquiry.

Prof. William A. Hammond saw her in consultation on the following day, and, without my giving him any hint or information, confirmed my diagnosis of lead-palsy, although from the

mother's description he expected to find a case of "Pott's disease," and examined her especially for it.

Not being able to ascertain, after the most careful inquiry, any source from which the lead could have been received into the system, he stated that it might possibly be a case of muscular atrophy from excessive use, and, unless the muscles could be stimulated by the continuous current of galvanism, the prognosis was very unfavorable.

The exertion of stopping the runaway horse seemed to justify this opinion. I applied a powerful battery of Kidder's without producing any muscular contraction.

As there was rather profuse menstruation, attended with great pain, and intense vaginismus, and as Dr. Thomas had informed me that there was an hysterical element in the case when he had seen her two years before, I called Dr. Marion Sims in consultation September 27, 1868.

The pain of examination was so intense that, having no chloroform at hand, we had to postpone it.

September 28th, Dr. Sims and Dr. Neftel saw her with me, and I had to carry the chloroform to profound stupor, with stertorous respiration, before Dr. Sims could make any examination of the vagina. No serious disease was discovered save this intense vaginismus. Dr. Neftel stated that he had seen three cases of "lead-palsy" in which vaginismus had been a prominent symptom. Is it a symptom of the disease in females?

On again examining her for the source of the lead, she asked me "if it could possibly come from the whiting." On asking her what that was, she informed me that it was the "Bloom of Youth," used for the complexion, and manufactured by Laird, 74 Fulton Street, New York. She had used nearly a bottle a month, for about two years and a half, but for the last eight or nine months had been compelled to have the application made by an assistant, as she was unable to apply it herself.

She gave me the remnants of a bottle of the "Bloom of Youth," which, upon analysis by Prof. R. O. Doremus, was found to be highly impregnated with acetate and carbonate of lead.

I immediately put her on large doses of iodide of potassium, commencing with twenty grains a day, and increased it up to ninety. Collecting the secretion of urine for the following three

days, I also sent it to the doctor for examination, and received the following reply :

"NEW YORK, October 8, 1868.

"MY DEAR DOCTOR: The sample of urine you sent me yields a small quantity of lead.

Yours cordially,

"R. OGDEN DOREMUS.

"PROF. SAYRE."

After she had been under the use of the iodide of potassium for about one week, the Kidder's battery, at the same strength as at first applied without effect, now produced quite vigorous contractions.

Its use was now continued every other day, for about ten or twenty minutes at a time, with most marked improvement.

Believing that the natural position of the fingers was important to sustain the circulation, and that voluntary exercise was necessary to increase the nutrition and development of the muscles, I got Dr. Hudson, the manufacturer of artificial limbs, to construct for her a very light extension apparatus for the hands and fingers, which answered the purpose most admirably.

Dr. Hudson has made another set of these instruments for me in another case, which are so great an improvement upon the first that I will refer to them in the description of the case in which they were applied.

With the instruments properly adjusted she could play upon the piano remarkably well, and I think that this use of her hands materially aided in expediting her recovery, which is now almost perfectly complete.

I received a letter from her dated November 25, 1868, written in a most beautiful hand, and in which she states: "My hands have improved wonderfully, and beyond all expectation. . . . My left hand, which, you will remember, I could only raise for a second, and then with great difficulty, I can now use better than I could my right hand when you saw me two weeks ago. My right hand has improved so rapidly that I can extend the fingers almost perfectly straight. . . . I have gained over twenty pounds, and my arms measure at the wrist six and a quarter inches, and just below the elbow nine and a half. And I feel better in every particular than I have for more than two years."

CASE.—Mrs. —, residing on the Hudson River, came to me, November, 1868, suffering from complete paralysis of the

extensor muscles of both hands, and of all the fingers, caused by the use of "Laird's Bloom of Youth." The arms were cold, the interosseous muscles were wasted, as well as all those upon the posterior aspect of the forearms.

The paralyzed muscles give no response to a current from a strong Kidder's battery. The arms measured above the wrists five inches, below the elbows seven and a half inches.

Three years ago she commenced using "Laird's Bloom of Youth," for the complexion. After a year she began to suffer from nausea, pain in the back, colic-like pains, frequent headaches, with general debility. Shortly after this she began to observe *weariness* in the extensor muscles of the wrists and forearms, both hands having a tendency to drop.

Drs. Clark and Thomas, of this city, saw her in consultation with her regular attending physician, Dr. Hasbrouck; by them the case was considered (as the patient states) as one of "paralysis and nervous debility, with dyspepsia."

She continued to use the cosmetic at the rate of about a bottle a month.

The paralysis of the extensors increased continuously, until for the last six months she has become perfectly helpless as regards the power of extension of the hands or fingers. She has to be fed and dressed by her maid; in fact, has no more use of the hands than if they were dead.

She walks with an inelastic step, stumbles on going up and down stairs, and becomes easily exhausted upon any muscular exertion. In this case there was slight blueness on the margin of the gums.

I gave her 90 grains of iodide of potassium every day, with dilute sulphuric acid, and ordered a "Turkish bath" twice a week. At the end of one week the battery, applied with the same power, produced manifest contractions. This was applied every other day for twenty or thirty minutes, friction and shampooing of the muscles, with passive movements every day, and in three months she had so far recovered as to dress herself—even to the putting on of a well-fitting glove, and also buttoning it. At the end of five months she had entirely recovered, and gained twenty-eight pounds in weight.

CASE.—Miss —, of Maryland, aged twenty-one, came to me in April, 1869, with complete loss of power of all the extensor



muscles of both forearms. The hands were wasted to a skeleton, and the interosseous spaces on the back of the forearm of either side were so conspicuous and deep that, when her forearms were prone and flexed at a right angle with the arms, water would remain in them like a trough. (See Figs. 271 and 272.)

She stated that five years before, in 1864, while very thinly clad, she was exposed to intense cold; that both of her arms were nearly frozen, and looked almost transparent. This exposure was followed by a rheumatic fever, confining her to bed for three months. During this attack, and after her recovery, she was troubled with severe constipation, frequent attacks of colic, and constant nausea. Was compelled several times to resort to croton-oil to secure an action from the bowels.

In 1865 she went to Canada to be under the charge of Dr. Mack, who treated her for some uterine trouble (was it vaginismus?), and also applied the actual cautery to the lower part of the spine, but all without any benefit, as the colic, cramps in the stomach, nausea, and general prostration, remained the same as before.

In 1866 she first began to notice the dropping of her hands and the wasting of her forearms. About this time she made a violent exertion in attempting to hold a hard-pulling pair of horses in their attempt to run away with her, and immediately after lost all power over both of her hands. The flexor muscles after a while recovered slightly, but the extensors of the fingers and hand have remained powerless until the present time.

Dr. S. Weir Mitchell, of Philadelphia, has treated her for the last two winters with electricity, but so far as extension of the hands or fingers is concerned without the slightest apparent benefit.

She states that the muscles of her arms and shoulders have very materially improved under Dr. Mitchell's treatment, and that her general health is somewhat better, but that her hands and fingers are the same as at first, and that Dr. M. had given her a very unfavorable prognosis.

Dr. Mitchell's knowledge, skill, and experience in the use of electricity being equal, if not superior, to those of any one in this country, I felt satisfied that she had had all the benefit that that agent alone could give her, and I asked her if he had ever suspected that lead had anything to do as an agent in causing the

paralysis. She replied that he had not; but that she had recently informed him of my first case, which was so similar to her own as to attract her attention, and stated to him that she had used the same material, "Laird's Bloom of Youth," since she was sixteen years of age. He then gave her iodide of potassium, but as there was no improvement he was inclined to think that lead had nothing to do with it.

My impression is, judging from the result since, that he did not give the medicine in sufficient quantity.

I applied the electrodes from a seventy-cell Kidder's battery, and also from a powerful battery of Drescher's without producing the slightest contraction of any of the extensor muscles except a very feeble action in the extensor minimi digiti and a barely perceptible action in the extensors of the ring-fingers. Sensation was not entirely abolished. The same battery with only thirty cells when applied to the shoulders or lower extremities produced



FIG. 271.

strong muscular contractions. I immediately put her on 90 grains of iodide of potassium a day, and, as soon as the specific eruption of this medicine began to appear upon the face and neck, the same battery would produce manifest contractions.

The electricity (continuous current) was applied about fifteen

minutes every day, and she wore Dr. Hudson's extension apparatus most of the time, day and night. At the end of three weeks, without the extension apparatus, she was able to take a

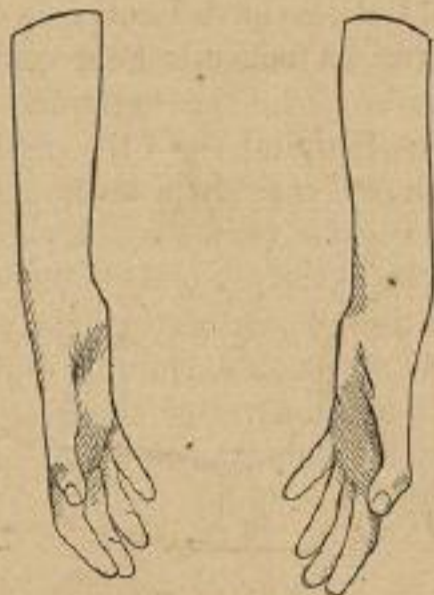


FIG. 272.

plate of ice-cream in her left hand, and feed herself with a spoon in the right, a thing she had not done for two years.

Of the value of Dr. Hudson's apparatus in cases of this kind, I cannot speak in too high terms. It is very light and beautiful,

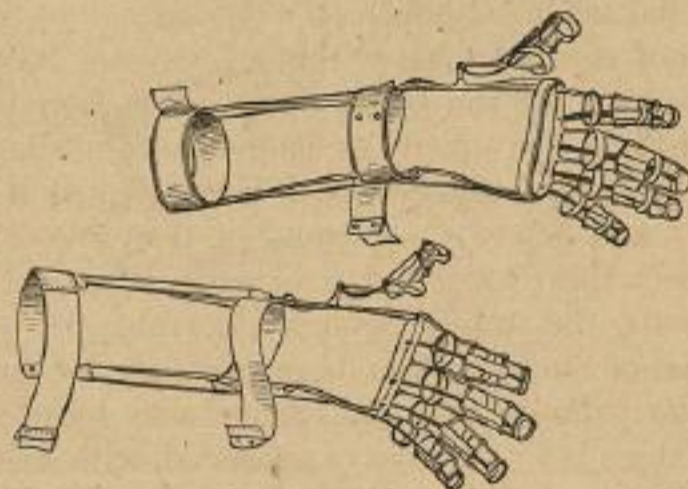


FIG. 273.

is worn without any inconvenience, enables the patient to exercise the muscles of the hands and fingers constantly, and thus materially facilitates nutrition and development. Figs. 273 and

274 give a very good idea of its construction and manner of application.

Fig. 272 is a cut from plaster-casts of her arms, taken for Dr. H., to adjust the extension instruments by.

Figs. 271 and 274 show the difference in the position of her hands, before and after instruments were applied.

All of these cuts are from photographs by Mr. Mason, photographer to Bellevue Hospital.

This patient recovered entirely in about eighteen months from

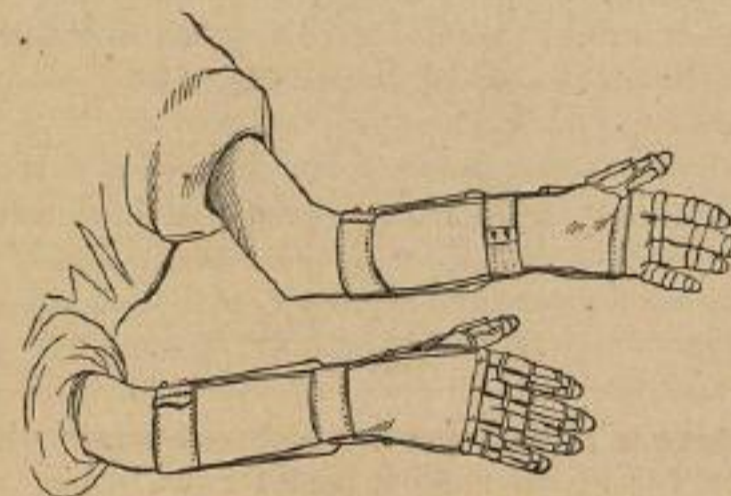


FIG. 274.

the time the treatment was commenced, although the case at first was considered as almost hopeless.

The use of cosmetics has within a few years become so very common, even among the better classes of society, and, as most, if not all of them, are equally as dangerous to use as the particular one described in this report, I have deemed it my duty to place these cases before the profession, that, knowing their injurious effects, they can guard their patients against thus voluntarily poisoning themselves through ignorance.

This class of cases has, also, been mistaken for spinal congestion, and the patients have had their backs burnt with moxas. In females there is almost always associated, with wrist-drop from lead-poisoning, a condition which has been called *vaginismus*. This is an irritable condition of the vagina that may very easily lead to errors in diagnosis, unless proper care is exercised in the examination of the case. This condition of the vagina has been particularly described by Dr. J. Marion Sims, of this city.

In all doubtful cases a careful analysis of the urine should be made, for, if lead is present in the system, it can be very easily detected in this excretion.

TREATMENT.—The indications in the treatment are to eliminate the poison from the system; to restore lost or impaired muscular power, and to assist the muscles in the performance of their functions.

Recovery is usually complete when these indications are properly fulfilled.

For eliminating the poison, iodide of potassium is the chief remedy; and it must be administered in such quantities as will increase the elimination, which is gradually taking place through the kidneys.

In many cases success has not been obtained in this direction, simply because the remedy has not been used in sufficient quantities.

It may be administered, if necessary, at the rate of 120 or 150 grains a day, although 60 or 80 is all that is usually required.

The means to be used for restoring lost or impaired muscular power, in addition to the internal treatment, are galvanism, hypodermic injections of strychnine, friction, etc. These measures must not be employed, however, in such a manner as to produce over-fatigue of the muscles. Galvanism should be used only when the muscles are properly supported, so that they will not be obliged to lift any weight when stimulated to contract.

To afford mechanical support to the muscles, a very convenient apparatus can be constructed of adhesive plaster and elastic bands, as suggested by Dr. Van Bibber, of Baltimore. Attach two strips of adhesive plaster to the posterior surface of the forearm in the form of a letter V, with the apex of the letter toward the elbow. The lower extremities of these strips will serve as points for the attachment of pieces of elastic bands or rubber artificial muscles. A piece of fine elastic bandage, attached to one extremity of a strip of plaster, may be passed into the palm of the hand around the middle and ring fingers, and back to the extremity of the other piece of plaster. This furnishes a constant elastic force, which gives support to the paralyzed muscles, and does not interrupt or impede motion, but is not to be compared, in practical utility, with the ingenious device of Dr. Hudson, as seen in Figs. 273 and 274.

And now, gentlemen, having come to the end of the term, where our lectures must close, I would assure you that no one regrets more than myself that want of time prevented me from making them more thorough and complete. I have endeavored, in the short space of time allotted to me, to explain to you, as clearly as possible, my views in regard to the pathology of the diseases and deformities referred to, and the general principles of their treatment, giving you practical illustrations of the application of these principles in the different cases that have been brought before you.

You may find in your future practice some cases which you may not have had an opportunity of clinically examining during this course of lectures; but the same general principles which I have demonstrated to you in the cases which have been presented, I think you will find equally applicable to them. You must depend upon your own ingenuity and observation for the practical application of them.

Many of the doctrines I have taught, you will find in direct variance with those of your text-books, and you may meet with opposition from your professional brethren when you come to put them in practice. Having tested them so frequently myself, I feel confidence in commending them to you as being reliable. If in practice you find that they will not bear the test of experience, you are at liberty to reject them. If in the future you can discover new methods which are more satisfactory, it will be your duty to adopt them, as I would myself renounce any doctrine that I had ever taught whenever I was convinced of its error, and adopt other methods of treatment which my judgment pronounced superior to what I had practised before. Thanking you for your devoted attention during my lectures, and wishing you a happy, useful, and prosperous professional career, I bid you all God speed, and an affectionate farewell.