to relax the short flexor. The first phalanx is then hyper-extended and carried bodily forward.

Complete complex dislocation was considered by Farabœuf to be the result of ill-directed and violent attempts to reduce a complete simple dislocation by manipulation. In this form (Fig. 5 and Fig. 6) the glenoid ligament is tucked under the

FIG. 5.

Complete complex dislocation of the first phalanx of the thumb. A, Glenoid ligament. B, Sesamoid bone. C, Flexor brevis pollicis. (Farabœuf.)

FIG. 6.

Complete complex dislocation showing the deformity. (Farabœuf.)

base of the phalanx so that its articular surface is in contact with that of the phalanx, and it intervenes between the base of the phalanx and the metacarpal bone. In this position the glenoid ligament forms an insuperable obstacle to reduction by manipulation and these are the really difficult cases. To overcome this difficulty Farabœuf suggested to Verneuil that he should make an open incision on the dorsum of the joint and divide the inverted glenoid ligament in the middle line against the back of the head of the metacarpal bone. Verneuil found the method entirely successful in his case. Hulke in "Holmes's System of Surgery" suggested the same method as the result of dissections made by him, but he does not appear to have adopted it in an actual case. Mr. Jonathan Hutchinson, junior, states in a paper drawing attention to this method that it was certainly known as early as the time of the great surgeon Desault.

We may sum up the whole of this matter thus:—1. That dislocation backwards of the first phalanx of the little finger is rarer than that of the index finger and much rarer than that of the thumb. 2. That, unlike the similar dislocation in the thumb, it is probably produced in most cases by violence applied to the dorsal surface of the head of the metacarpal bone. 3. That the three varieties—(a) incomplete dislocation; (b) the complete simple dislocation; and (c) the complete complex dislocation, so admirably described by Farabœuf in the case of the thumb—apply equally to the little finger. 4. That the incomplete dislocation is easily reduced by pushing the phalanx forward; the complete simple form by the method of manipulation suggested by Farabœuf; whilst the complete complex dislocation, the result of ill-directed manipulation, requires the simple operation suggested by Desault, Farabœuf, and Hulke.

Upper Wimpole-street, W.

THE TREATMENT OF DUPUYTREN'S CONTRACTION AND OTHER POINTS IN THE SURGERY OF THE HAND.¹

By A. H. TUBBY, M.S. LOND., F.R.C.S. ENG.,
SURGEON TO WESTMINSTER HOSPITAL; SURGEON TO THE NATIONAL
ORTHOPÆDIC HOSPITAL; SENIOR SURGEON TO THE EVELINA
HOSPITAL FOR CHILDREN.

CONTRACTION of the palmar fascia, or "Dupuytren's contraction," is an affection of insidious onset and slow but sure progress. It so deforms the hand as to seriously interfere with its integrity, and once started it progresses steadily until one or more fingers are brought down and held firmly flexed into the palm of the hand. Beginning usually in the ring finger it spreads to the middle and the little fingers and not seldom to the index finger. Thus, in a patient who came to me recently in the right hand the ring and middle fingers were affected, in the left hand all four fingers, the ring finger in both hands being the most involved. The site of commencement of the thickening of the palmar fascia is generally at the deepest part of the palm of the hand—namely, the transverse crease near the base of the ring finger. From this spot the thickening or induration spreads upwards towards the wrist and downwards towards the fingers. As a rule it affects the lateral prolongation of the fascia on the fingers and occasionally, as in a case I saw recently, the central portion of the digital prolongation is affected.

The exact causes of the induration and contraction of the palmar fascia have never been decided, but there are certain points which stand out quite clearly—viz.: (1) it is more common in the male sex than in the female sex; (2) it is met with generally after 40 years of age; and (3) a large number of the patients who suffer from it have a gouty history. In this connexion it might be mentioned that Mr. C. B. Lockwood found crystals of urate of soda deposited in the affected structures. The question of traumatism is somewhat difficult to speak of, for about 50 per cent. of the patients can trace the onset to a slight injury or repeated rubbing of the palms; whereas, on the other hand, many patients have never been subjected to any manual labour. Therefore the exact cause must remain in doubt unless we are prepared to favour the late Mr. William Anderson's theory that the affection is bacterial in origin and that micro-organisms find their way into the fascia through a wound in the palm. Unfortunately, however, no bacteria have been demonstrated, yet as a fact of some interest we may recall the existence of bacteria or micro-organisms in warts on the hands.

For treatment it has been usual to adopt the method first practised by the late Mr. William Adams of multiple subcutaneous division by a fine tenotome of all the contracted bands of the palm of the hand and of the fingers. This method is fairly successful but it has certain disadvantages. These are as follows: 1. The difficulty often experienced of completely dividing all the bands. If these should extend upwards and over the site of the superficial palmar arch complete division here cannot be effected without danger of wounding the vessels. 2. It frequently happens, therefore, that more than one operation is necessary, as the fingers cannot be fully extended unless the fascia is completely divided. 3. The after-treatment is decidedly tedious and sometimes involves the use of expensive and complicated apparatus. 4. It has been shown that some cases which have been treated by this method recur, much to the patient's disgust and disappointment. So in suitable cases I have operated by the open method—that is to say, I have dissected out all the affected fascia in the palm. It is, however, necessary to carefully select the patient. The urine should be examined for albumin and for sugar, and the patient should be in good health, spare, and one apparently possessing good healing power. The advantages of operating by the open method are as follows. 1. All the affected fascia in the palm can be completely removed and there is no liability to recurrence. A gentleman, aged 66 years, in good health, on whom I operated five years ago by this method, has never shown the slightest sign of trouble and the palm is as soft and flexible as it is possible for it to be. And if

LITERARY INTELLIGENCE.—MESSRS. J. & A. Churchill announce that the "Manual of Anatomy" which the late Professor Alfred Hughes was writing will be published in due course. A large portion of the work was ready before Professor Hughes left for South Africa and it will now be completed and seen through the press by Mr. Arthur Keith, joint lecturer on anatomy at the London Hospital. Many of the illustrations will be from drawings of the well-known dissections exhibited by the late professor.

¹ A paper read before a meeting of the British Orthopædic Society on Oct. 13th, 1900.

there be any truth in Mr. Anderson's bacillary theory the best treatment is to get rid of the whole affected part as soon as possible. 2. By the open method treatment is shortened, for as soon as the wound in the palm is firmly healed the use of splints can be discontinued. 3. No expensive apparatus is necessary, thin narrow malleable iron splints being all that are required. Certain disadvantages have been urged against the open method. Firstly, it involves a prolonged dissection, but in itself to a skilled operator this is not a matter of great moment; and secondly, while removal of the indurated fascia in the palm is easy by dissection it is not possible to dissect it out off the sides of the fingers except in strictly localised bands; and, thirdly, if for any reason the hand should go septic after the operation the results are disastrous. It is quite possible, however, that such an event might happen in operating by the older method.

The measures adopted are as follows. The hand is made absolutely aseptic by all the most approved methods and to this point, if the surgeon decides to operate by dissection, he must attend himself and not delegate it to a subordinate or to a nurse; for this is the essence of the whole business and any want of care and forethought in this particular will end in disaster. The same remark applies to instruments and to the accessories. As an anæsthetic I prefer chloroform or the A.C.E. mixture, avoiding ether whenever possible because of the increased hæmorrhage associated with it. An Esmarch's bandage is previously placed around the upper arm so as to prevent the otherwise free oozing from obscuring the field of operation, and the incision is then made vertically over the most prominent band of fascia, extending from the position of the superficial palmar arch to the root of the finger. In extensive cases this incision can be enlarged by carrying out transverse cuts at either end. The dissecting back of the flap of skin is difficult without button-holing it. What happens is that the thickened epidermis peels away from the cutis vera while the latter is attached very firmly by numerous fibrous prolongations to the fascia beneath. Then, too, if the fascia is nodular it often happens that the skin is exceedingly thin, so that great care must be taken in dissecting it away, but it must be turned back as far as the limits of the affection. The next point is the removal of the fascia. Before doing so it is well to define the digital vessels and nerves as they emerge from the divisions and trace them back by cutting through the thickened fascia towards the wrist. The affected structures can now be easily removed and often the finger or fingers can be straightened. In those cases where the fingers are involved a small fine tenotome is passed between the skin and the bands on the lateral aspects and the fibrous tissue divided. An important point is the arrest of hæmorrhage. The Esmarch bandage should be released and whatever oozing occurs should be checked by pressure or by the application of hot sponges. If any arteries spurt it is most advisable to use torsion to check them and not to put on ligatures, for these are apt to give rise to trouble in healing. The application of sutures should be careful and the material to be used is horse-hair. If it happen when the fingers are straightened that there be a hiatus of skin at their roots I have several times performed a small plastic operation and slipped down a little skin to cover up this spot. Sal alem-broth dressings are then used and rigid asepsis must be continued until every scab has disappeared. In one of my patients whom I warned on this point considerable trouble followed from neglect. He was a sea-captain and finding that the palm was all but well he took off the dressing and proceeded to climb up the side of the ship by a rope, knocking off a small scab. Acute œdema and trouble in the palm of the hand followed with considerable stiffness and gave him much inconvenience for four months. Subsequently the whole matter settled down and the patient's hand is as good as it can possibly be. The question will arise, Should the hand be put up at once in the straight position? If there is much contraction of the fingers it is better not to do so, because of the pain which arises from stretching of the digital nerves which have become structurally shortened while the finger contracted downwards.

On the whole, then, in suitable cases removal by the open method with the aid of aseptic surgery is a quick and thorough method of dealing with this deformity.

CLUB-HAND.

This is a comparatively infrequent deformity and is almost always congenital. During the last 10 years I do not think

that I have seen more than 15 cases and they were mostly unilateral. In some of them the child was born prematurely and there were defects elsewhere. For so unusual a deformity the classification adopted is somewhat intricate, but it is analogous to that of club-foot. The hand may deviate either externally or internally and be either flexed or extended. Hence there are radial and ulnar club-hand and palmar and dorsal club-hand. But it is not often that the deformity is simple, and mixed deviations occur; so that radio-palmar, radio-dorsal, ulnar-palmar, and ulnar-dorsal forms are seen. Morphologically the cases may be grouped thus: 1. The skeleton is complete and otherwise well formed and the malformation consists in a modification of the relations of the articular surfaces and in an abnormal inclination of the line of the joint. 2. The skeleton is complete, but deformed in parts, the radius is often shortened and the carpal bones atrophied. This is the most usual variety. 3. The skeleton is incomplete and deformed. The radio-palmar varieties are generally of this group. There is an absence of one or more bones of the metacarpus or of one of the bones of the forearm. When the radius is absent the ulna is shortened, increased in size, and much curved. The carpal articulation is abnormal and there exist in it numerous fibrous bands and tendons which are in no way related to normal structures. Frequently other irregularities are present in the body, such as absence of groups of muscles or vascular and nerve defects.

Unfortunately, the deformity does not admit of very successful treatment. Passive movements and massage are of service when the patient is young and they are valuable in preventing aggravation of the deformity by contraction of the tendons on the concave aspect of the wrist. Various apparatus have been devised with the object of rendering of the hand useful, but they are not very satisfactory, and the patient can use the hand in many cases to better purpose unfettered by any contrivance. Tenotomy is also of service, and those tendons should be divided which interfere with the placing of the hand in a right line with the forearm and care be taken that important vessels and nerves are not wounded. Dr. L. M'Curdy planned and carried out the following ingenious operation in a radio-palmar deformity with hypertrophy of the lower end of the ulna. He made an incision obliquely across the forearm, beginning upon the dorsum and passing obliquely upwards to the flexor aspect. The tendons on the radial side were tenotomised, the lower end of the ulna was divided obliquely, and to the outer part the semilunar bone was connected with silkworm-gut. In many of the cases which I have seen I have been content to divide the contracted tendons and to gradually improve the position of the hand by massage, passive movements, and a retentive malleable iron splint.

ON THE PROGNOSIS OF TENDON DIVISION AND SUTURE IN THE HAND.

Cases are frequently occurring in surgical practice where division of the tendon has taken place in the hand and failure of complete union followed even after the most careful suture. This is not a mere matter of chance, but it is dependent on certain well-ascertained facts. Some of these are the following: (1) the index of tension at which the muscle and tendon are set—i.e., their powers of retraction; (2) the limitation of retraction of the tendon by bands of fibrous tissue binding it in its grooves; and (3) the character of the structures at the spot where division of the tendon occurs—e.g., if division is made where the tendon is surrounded by vascular areolar tissue, plentiful formation of fibrous tissue takes place and the tendon unites despite considerable retraction of the divided ends. It therefore becomes necessary to remember the foregoing three points in forming a prognosis as to the results of tendon-division.

Bearing those points in mind, the seat of election of purposeful division of a tendon for contraction can be determined. It may be of service to give examples. If the extensor tendons of the fingers are severed better results can be expected than in the case of the flexors owing to the closer attachment of the former to the sheaths, the integument, and to one another. But the retraction is greater when division occurs above the wrist than below it. The extensors of the thumb frequently suffer in wounds of the hand. If they are divided at the back of the wrist they retract only about 1 centimetre, as they are more or less bound down by periosteum and good union occurs, but if the division takes place over the metacarpal bone the central end will retract three or four times as much, as the

tendons play freely in the sheath, and the latter is very loosely attached to surrounding structures, so that good union is rare. When the wound is at the metacarpal phalangeal articulation of the thumb the prognosis as to healing is good, for the tendons are bound down to the capsule of the joint and cannot retract even though the joint has been opened.

The flexor tendons, if divided at the wrist-joint, retract very considerably, but the superficial ones less so than the deep, for the former lie in tubes of fasciæ; yet better union occurs here than in the palm of the hand, because the neighbouring structures are more vascular and a good uniting bond of tissue is thrown out. A most important point is to keep the wrist fully flexed for at least four weeks after the accident and then gradually bring the hand into the straight position, taking at least a month to do so. In any operation on the flexor tendons of the hand and fingers the wrist is the seat of election, as it is more likely that new tendon formation will follow, and the exact length of this can be graduated by carefully controlling the position of the hand on the forearm. A recognition of these points is of importance in the treatment of contracted hand for spastic paralysis.

Weymouth-street, W.

LOSS OF THE LEFT FOREARM BY AMPUTATION; DEATH 49 YEARS THEREAFTER; NECROPSY; LOCALISED AREA OF ATROPHY AT THE BASE OF THE RIGHT SECOND FRONTAL GYRUS.

By PEERS MACLULICH, M.D. DUB.,

ASSISTANT MEDICAL OFFICER, JOINT COUNTIES ASYLUM, CARMARTHEN;
AND

EDWIN GOODALL, M.D. LOND.,

MEDICAL SUPERINTENDENT, JOINT COUNTIES ASYLUM, CARMARTHEN.

In the following case we were fortunate enough to get a necropsy and within a few hours of death.

On admission the patient was found to have undergone amputation of the left forearm just below the elbow-joint (very high up). He had a considerable range of movement in the left upper arm and he used the mutilated limb for holding objects against his side. The history was that when between 13 and 14 years of age a cart went over his left forearm, necessitating amputation. Up to within three years of admission he had been healthy in mind; he first began to show change then, but was not incapacitated. He was of ordinary intelligence and his occupation was that of a post-master and insurance agent at a village. There had never been any fits or convulsive movements. A few days before admission he began to show symptoms of acute melancholia.

At the necropsy, on removal of the pia mater, a patch of softening, roughly oblong, about one and a half centimetres in length and from three-quarters to one centimetre in breadth, was found occupying the grey matter of the brain at the base of the second right frontal gyrus, where it joins the ascending frontal (see figure). It was ochre-coloured. The disorganised tissue was extremely thin and wrinkled, evidently wasted. The lesion looked old, although there was no sclerosis. The subjacent white matter did not appear changed to the naked eye. No lesions were found at any other part of the brain, which was of good consistence. The basal vessels were atheromatous but not at all strikingly so.

The question of interest in this case is whether the shrivelled and softened area in the right cerebral hemisphere bore any relationship to the loss in early years of the left forearm; whether the deprivation in function resulting from such loss had caused the cortical wasting. The area of wasting and softening was well in front of the recognised area for the arm, hand, and fingers, which (as is well known) are placed in the central gyri behind the second and, to some extent, behind the third frontal gyri. As Oppenheim points out,¹ the extent to which the motor region embraces the portions of the frontal (and temporal) lobes bordering upon the motor zone proper (central gyri, paracentral lobule) is doubtful. In all probability the most posterior part of the three anterior frontal gyri must be reckoned in man as well as in the lower animals to the motor region. These outlying parts, however, probably play a subordinate rôle in comparison with that which is to be ascribed to the motor area proper.

The lesion was copied direct on to a Giacomini brain-model and the latter photographed. Circumstances did not allow of photographing the brain itself.

A male, aged 63 years, was admitted to Camarthen Asylum suffering from acute melancholia on May 10th, 1900. The heart was found clinically to be much atrophied. He died suddenly from angina pectoris on May 17th. A post-mortem examination was made 13 hours after death. The cause of death was degeneration of the cardiac muscle.

It would be contrary to all experience derived from animal experimentation to correlate the cerebral lesion in this case with the loss of the hand and forearm, on account of the forward position of the lesion. It must be remembered that

¹ Lehrbuch der Nervenkrankheiten, Berlin, 1898.