this is done. The desideratum is to have a bandage of very definite thickness, thoroughly and equally saturated with liquid plaster.

It will render the further description more easy, if the reader will think of the bandage thus prepared as affording, at the pleasure of the surgeon, either a narrow but thick band, or, when opened out by removal of the basting thread, a flattened, much wider, or expanded portion.

The narrower portion of the bandage permits application in simple ring or in figure-of-8 fashion around the terminal part of the fractured limb; and the wider expanded portion, carried upwards on the sides of the limb, furnishes a perfectly firm and well-moulded support to the injured part. A layer of wadding may be placed round the limb, so as to secure any projecting point from undue pressure, before the bandage is applied; or most commonly it will be found sufficient to rub the limb over with a fairly thick coating of oil or simple ointment. The plaster bandage will then not adhere to the skin.

I will speak first of the mode of application in simple fractures of the forearm. The arm, as is usual, must be placed in position between pronation and supination, and extension must be kept up so as to maintain the fractured ends of the bones in their proper relation one to the other. The middle of the bandage is applied to the front of, and then round, the wrist-joint. A ring is formed in this way, embracing firmly the lower end of the radius. One end of the bandage is now carried from behind between the thumb and finger, and downwards in its expanded portion over the anterior face of the forearm; while the other half of the bandage is taken directly from the ring over the wrist upwards over the posterior surface of the forearm.

Two long but narrow and rather strong bits of wood are now applied, one on each face of the forearm, with tolerable firmness; and a few turns of tarlatan bandage, *without plaster*, must be applied over these, to keep the whole framework in place until the drying and hardening of the plaster be fully completed. The advantage from these temporary wooden splints is, that the middle portion in length of each expanded portion is thus bent inwards, so as to correspond to the normal interval between the radius and ulna.

If there be simple fracture through the carpal end of the radius, the encircling ring is placed round the hand over the metacarpo-phalangeal joints; and the moulding of the wider portions of the bandage is commenced almost at once, so as to give support to the point of injury.

When the plaster is perfectly firm, the outer encircling bandage and the wooden splints are removed. A simple tie, elastic or other, will then suffice, if placed round the arm not far from the elbow, to keep the plaster framework in close apposition to the limb.

If simple fracture of the fibula, or of the tibia and fibula, transverse and without tendency to displacement, be in question, the bandage, prepared as above, is at once put on. The middle and narrow portion of the bandage is placed to correspond with the lower third of the leg posteriorly; the ends are brought round in front, and a complete close-fitting ring is so made; then they are brought down, each one over the corresponding malleolus, and crossed beneath the foot; finishing, finally, by the close application of the expanded portions, one on each side of the limb, nearly or quite up to the head of the tibia.

The best rule for the width of these expanded portions seems to be that, in the midline, both anteriorly and posteriorly, a vacant space of two fingers' breadth should be left between the corresponding edges of the plaster bandage.

Should the fracture of the leg be oblique, with more or less of riding and displacement, an ingenious adaptation of the plaster bandage is employed. To the leg itself a plaster bandage, as above named, is applied, with this variation only, that, before the crossing of the narrow portion is made beneath the foot, a roll of bandage is placed in close contact with the sole, and over this the crossing is managed. When the plaster has set, the bandage is taken away, and a projecting yet quite firm stirrup is left beyond the foot. This plaster bandage, so-called "extenseur", is covered with a layer of oil or simple ointment, and then an outside framework is arranged.

A long bandage is taken, soaked in plaster as directed. Between the layers a short piece of wood is slipped, to make an outer stirrup about three inches below that attached to the leg. The bandage is carried up outside the leg on each side to a point above the knee, and each side-prolongation is stiffened by the insertion of a piece of wood of the required length. The ends of the bandage are wound round the lower third of the thigh, so forming a complete ring, and enclosing the upper ends of the lateral wooden supports. This application is known as the "contre-extenseur".

The coating of oil or grease prevents any adhesion of the two bandages at the points where they are in contact. To complete the fixing, when the plaster shall have thoroughly set, the two stirrups, superior or foot attachment, and the inferior or outer framework, are tied together

by a band of strong elastic. The extension so obtained will maintain the fractured ends of tibia and fibula in their proper place.

M. Dumont has applied plaster bandages on the above principles to cases of morbus coxarius; to fractures of the thigh, leg, and arm, simple and compound; and to cases of joint-disease when extension or absolute fixation is desirable, with an unvarying good result. As yet, beyond notices in the local medical journals, the only publication which treats at length of this method appears to be a published thesis, *Du Plâtre en Chirurgie*, by Dr. Cyrille Droulon, published by M. A. Parent, Paris, 1880.

When at Caen, I saw the application of this plaster to a case of disease of carpal bones in a child; several cases of fracture of the carpal end of the radius, in each one of which, I may remark in passing, the movement of the fingers was from the first day perfectly free, complete, and unrestrained; a simple fracture of both tibia and fibula; and a case of extensive caries of the tarsal and metatarsal bones, which had been safely conducted to a good firm ankylosis, with perfect repair of several old sinuses. Since my return home, I have applied the plaster in four cases, all still under treatment; viz., fracture of the tibia and fibula, not quite firm, fragment of imbedded necrosed bone still remaining; talipes varus, sometime after division of tendons; carious disease of the lower end of the tibia, where, after free gouging, some fragments still remained; and chronic hydrarthrosis of the right knee-joint, where complete apparatus, extension, and counter-extension seem to promise well.

The especial advantages which may fairly be claimed for this mode of using plaster-of-Paris may, I think, thus be summed up. There is no covering up of the fracture or injured joint. The support, with proper care in the application, is abundantly firm from the first moment; secondary displacement, even with a restless patient, is impossible. The materials are inexpensive, and not difficult of use. The need for complicated apparatus in the treatment of the majority of fractures is done away with; and the comfort and convenience, especially to those of us who practise in the country, will, I believe, be found to be very great.

I would only add that I am very sensible of the difficulty of putting into print an accurate and reliable description of the mode in question; but I shall be very glad to make the details as clear as I can (with the aid of some rude sketches) to any one who may think well to favour me with a letter of inquiry. I am but endeavouring to bring into notice an improvement which is wholly due to the careful inquiries of one of our profession—the genial and courteous surgical professor at the Hôtel-Dieu of Caen.

DUPUYTREN'S CONTRACTION OF THE FINGERS.

By A. S. MYRTLE, M.D., Harrogate.

THE following remarks are based on a long personal acquaintance with this deformity, as well as considerable professional experience. These contractions are very common, and cause much inconvenience. The subject of them cannot wash himself with comfort; wear gloves; shake hands; carry stick or umbrella; take hold of anything; or enter into many most desirable games like his neighbours, or on equal terms, if he makes the attempt. If medical, he finds great difficulty in making certain physical examinations, and in the performance of many surgical operations. This is particularly the case with the accoucheur, whose crooked fingers are always in his way; and, in *turning*, for instance, prove a source of acute suffering to himself, as well as to his patient. Such being the case, it is almost incredible that an affection so frequently met with, even among medical men, involving so many inconveniences, should have been so thoroughly misunderstood—so utterly neglected by the profession at large. For above thirty years, I have asked the advice of physicians and surgeons in my own case—men of the greatest repute, and I have met with scores of fellow-sufferers who have done the same in their cases, with the following result. Dr. A. examines the fingers most thoughtfully, and gives his opinion: "Ah, I fear nothing can be done, leave your fingers alone, I would not meddle with them"; or, "I see, gout; you know what to do as well as I can tell you: soak your hand in a solution of carbonate of soda, take a course of iodide of potassium, and drink Vichy water". "Do not allow any operation; you know Syme's opinion about that: worse than useless. Nothing but accidental and forcible rupture ever did good in such a case". Surgeon B. advises you to grin and bear it; and, if the fingers get very much more inconvenient, why, then, have them amputated. Now, this is no overdrawn description of the counsel we unfortunate cripples have received, and do receive, at the hands of our medical and surgical advisers; and it clearly shows that the profession

is, at this date, utterly ignorant of the pathological changes which constitute this contraction, or of the scientific method of treating it. This ignorance appears all the more incomprehensible, when we think of the clear light thrown on the nature of palmar and digital contractions by the teachings of Dupuytren, in 1832; by Goyrand's dissections, in 1834; by Partridge's, in 1844; and by the very full account given by Mr. Adams of London, before the members of this Association, in 1875; and by his publications, in 1876 and 1878. The writings and illustrations of these men show, most conclusively, that the changes brought about in the palm of the hand and fingers are entirely dependent on changes which have taken place in the bands of fascia, common to both; that the tendons with their sheaths, the joints with their coverings and ligaments, are not implicated; and that, although these may have remained in a state of fixity, more or less complete, for a long period of years, they resume their natural position, and capacity for action, as soon as the contracted bands are divided. It is to this fact that operative procedure of the right sort owes its success, as, if the joints and tendons were involved or materially altered in any way, subcutaneous division of the contracted fascial bands would prove of little advantage, even in recent cases.

Two forms of contracted fingers are met with: the one traumatic, clearly traceable to some local injury; the other idiopathic. The former may occur in one finger only, or be confined to one portion of the palmar fascia. It may be found at any time of life, and is in all essentials the same as those contractions which can be traced to no visible cause; and are, therefore, spoken of as constitutional or idiopathic. These are generally met with after middle life; one or more fingers may be the seat of contraction, the third finger being most commonly affected; the forefingers and thumbs are very rarely implicated, although I have seen the forefingers and thumbs of both hands firmly closed—the hands presenting the same attitude as if prepared for boxing.

During the development of contraction of the fascia very little is noticed, as far as symptoms go. A little pain in the line of contraction, increased on any attempt at extension; this leads one naturally to keep the finger, if anything, flexed, especially during sleep. By-and-by, nodules appear, at first soft and tender to the touch, then firm, elastic, and painless. Gradually the finger gets more and more bent until it is brought, more or less, close to the palm; the skin immediately over the affected bands, in the course of years, becomes adherent to them, and assumes a puckered appearance, exactly like the cutaneous adhesions we so often see in cancer. The contractions gradually reach their limit in a period varying from one year to six. During their progress we have no very active symptoms, and the fingers can be used, as far as it is possible, without pain, and with no increase to the mischief going on.

What is the nature of this peculiar affection? Most authorities—among the number the late Sir William Fergusson, Sir James Paget, and Mr. Adams—speak of it as a form of gout; but I see no reason why gout, already supposed to be at the bottom of every aberration from health, should be saddled with Dupuytren's contraction of fascia; and my reasons for objecting to its being in any way connected with gout are the following. 1. It is never met with among women. Mr. Adams writes: "I have never seen it in women." Now, gout is very partial to the fair sex. 2. Many of the worst cases I have met with (my own among them) cannot boast of having a single gouty progenitor, and never exhibited a symptom of gout ourselves, although we have been affected with fascial mischief for fifteen, twenty, and thirty years, and some of us are over seventy-four. 3. Remedies which are known to have a specific power over the gouty diathesis have no influence here; even a long course of mineral waters and baths, which would remove old-standing and considerable gouty and rheumatic swellings, fail to produce the slightest amelioration. And, lastly, the very mode of dealing successfully with contracted fingers, by division, with subsequent mechanical extension, is a plan which even Mr. Adams would not venture to adopt in cases of enlargement, stiffening, and contraction from gouty deposit. Still, I am constantly met with the remark: "But you must allow that this thing runs in families". Most certainly; but, will you tell me what does not run in families? Stealing and lying do, extravagance and drunkenness; yet no one would ever dare to ascribe the conduct of the thief, liar, spendthrift, or drunkard to his being a victim to gouty hereditary tendencies; and, the sooner we give up the gouty theory regarding the nature of these contractions, the sooner shall we see our way to dealing with them successfully, and in their early stage.

If they are not gouty, what are they? Inflammatory? I think not, because they are unaccompanied by any of the ordinary symptoms of inflammation, or its results. The evil, whatever it is, is confined to the one structure; it does not extend to neighbouring tendons or joints, and is not destructive in any way or sense. The contracted fasciculi are

capable of being restored to their normal condition, and, with their restoration, the nodules disappear; and tendons and joints, which have remained useless for many years, are found to be perfectly healthy, and capable of resuming their natural functions. Such being the case, I am inclined to view these contractions as examples of simple hypertrophy of the tendino-fibrous bands which compose the palmar fascia, or its digital branches.

As regards treatment, I have little to say. There is only one safe and successful course open to the surgeon; and that is: subcutaneous division of constricted bands, with subsequent mechanical extension. The operation is by no means so easy as one would imagine; it involves great caution, and a highly educated touch. One must grope about with the knife in the dark, and divide every fibre of the tightened band separately—all the while the knife may be very close to most important structures, the division of which might be followed by very serious consequences. For further information on everything pertaining to contracted fingers, I must refer to Mr. Adams's treatise; and I would further advise everyone suffering from them to place themselves under his care, as I can bear witness to the marvellous success he has met with in dealing with some very old and complicated cases. For my own part, I owe him a debt of gratitude for the patience, skill, and kindness I received at his hands; and, when opportunity offers, I shall again submit myself with the greatest confidence to his treatment. My hand presented greater difficulties to the operator than he had previously encountered. I was under his knife for forty minutes, and then he had to desist, on account of a portion of skin, opposite the metacarpal joint of the ring-finger, giving way. The operation, therefore, was only partially successful; but, incomplete as it was, the amount of comfort and freedom my hand has received is greater than I ever looked for.

SURGICAL MEMORANDA.

CASE OF GUNSHOT WOUND OF SUPERIOR MAXILLARY BONES.

THOMAS H., aged 14, was brought to me on the morning of July 12th, 1881, at 3.30 A.M. His companion said he was very much afraid he had shot him, about half an hour before, with a revolver, but that he could see no wound. The boy, who looked a little pale, and was apparently bleeding from his right nostril, said he did not think he was shot, but that his nose was hurt. He had walked from the scene of the accident, about a mile and a half distant. After I had cleaned away the blood from his face, I found that the bleeding proceeded from a small wound just below the ala of the right nostril. I could see no wound of exit, and, on introducing a probe, I found that the wound ran slightly backwards and towards the left side for about two inches and a half. There was no wound of the roof of the mouth or floor of the nose. There was slight oozing of blood from the wound, and I found the canine tooth and the first bicuspid on the left upper jaw loose. I also found over these teeth the wall of the antrum projecting forwards, as if driven out by the bullet. The boy did not appear to be suffering much from shock. After I had probed and dressed the wound, he complained of feeling faint; I therefore had him covered up warmly, and gave some aromatic spirit of ammonia. When he revived I dressed the wound, after first syringing it out with carbolic lotion (one in thirty), with strips of lint dipped in carbolised oil (one in twenty), and had the patient removed home, a distance of about three miles. I saw him again the same evening, and found his temperature only 99.5°; pulse 75. I ordered him to be kept quiet, and fed on slops.—On July 13th, the temperature was 99°. The wound was discharging bloody pus. It was syringed with carbolic lotion.—On July 17th, he had continued well; and wanted to get up. Temperature 98°. I extracted the canine tooth on the left side. The end was broken off the fang of this tooth. Lotion injected into the wound of entrance came out through the socket of the tooth.—On July 19th, the external wound had closed. There was a discharge through the socket of the tooth.—On July 21st, I made an incision over the enlargement on the wall of the antrum, and found a fracture of the bone.—On July 30th, I extracted the first bicuspid tooth of the same side.—On August 2nd, three small pieces of bone had been discharged through the sockets of the teeth extracted. The boy continued well, with the wound discharging through the sockets of the teeth, until September 1st, when he began to complain of great pain in the wound, especially over the seat of the fracture. I therefore decided to attempt to remove the bullet. Accordingly, on Saturday, September 10th, with the assistance of Mr. Bertram Greene, resident pupil, Antrim Infirmary (who kindly acted as dresser for me through the entire case), I cut down upon the bone, just over the seat of fracture on the left