

leaves no tangible or visible mark, hence it conveniently serves the purpose of such subterfuge.

#### TREATMENT OF CONCUSSION OF THE BRAIN.

Since there are two totally different states in which the patient of concussion may be, viz., depression or excitation, so the treatment must be shaped as one or the other condition exists or predominates. As a rule, the first effect of concussion is to induce depression and exhaustion of the vital forces; and this condition must be met and counteracted by stimulants and excitants. The patient is often so prostrated that the reflex action of swallowing can be only imperfectly performed; a condition, in fact, which renders it extremely difficult to administer remedies by the mouth. If, while the muscles of deglutition are in a partly palsied state, liquid medicine be given by the mouth, the most of it will probably pass into the trachea and add to the patient's perilous condition by partially asphyxiating him. In fact, the same precaution is required here as must be exercised in administering medicines to a person moribund or near death. The wine or other thing then given, as the writer has witnessed, can strangle and immediately end life. Hence, when the patient is greatly prostrated by depression and can not readily swallow, fumes of ammonia should be applied to the nose; also tickling of the nostrils will often rouse the patient. Stimulants, as brandy and warm water and black coffee, may be injected into the rectum. Hot applications should be placed over the præcordia, and the surface of the body should be well rubbed, so as to promote the movement of the blood. In case of extreme prostration, syncope may be avoided, or rather life awakened by lowering the head so that the heart may be aided by gravitation, in carrying the blood to the brain. After the patient has been sufficiently resuscitated to swallow, then remedies may be given by the mouth. The administration of stimulants must be limited to the period of depression; afterward the treatment must look to controlling the inflammatory symptoms which usually present themselves after a few days. The stage of excitation is ushered in about the eighth, ninth or tenth day after the receipt of the injury. Should the patient be plethoric, then bleeding from the arm should be done; not less than a pint of blood should be drawn. The signal advantages of such depletion have been verified by the writer in several instances. If the subject be very robust, as much as thirty ounces can be safely withdrawn; thus inflammatory action, through the absence of material for its maintenance, is subdued and retained within tolerable limits. Depletion might be done by means of leeches; yet withdrawal of blood from an open vein is more effectual. A valuable adjuvant in this antiphlogistic treatment is ice, which should be applied to the patient's head as soon as he emerges from the primary stage of depression. The ice, well crushed, should be applied to the head in an India rubber bag, and this should not be heavy, lest it cause sloughing in the subjacent scalp. The head should be maintained in an elevated position, so as to favor the ascent of the blood through the veins, toward the heart. All constriction of the neck should be avoided. As a faithful ally in this work of derivation of the blood from the head, is warmth applied to the lower extremities; for this, hot water, contained in bottles or a rubber sack may be used. As

there is danger of freezing the scalp, so there is of burning the feet, unless the warmth be carefully used.

As to internal treatment, there should be given a purge; for this, none is better than calomel and jalap, 10 grains each. Besides this, to restrain or prevent the development of inflammation there should be administered iodid of potassium in doses of 10 grains, repeated every four hours for the adult. If the patient be a child of 4 or 5 years of age, the dose should amount to 3 grains, repeated three to four times daily; and should there be the usual restless somnolence, this must be controlled by bromid of potassium, of which an amount equal to that of the iodid of potassium should be given. By the use of this internal medication, the writer has frequently seen the subjects of severe concussion pass safely through the inflammatory stage; the temperature retained in low limits.

There should be mentioned a mode of treatment formerly much used in cases of cerebral concussion; this was vesication of the scalp. To do this, first let the hair be shaven off, and then the whole covered with emplastrum cantharidis. This does not act entirely as an ordinary blister; little serum is drawn out, but instead there will form a coating of fibro-albuminoid material over the scalp, tenacious and adherent. This vesication was a favorite of Dupuytren, and it is claimed that good results followed its use. Yet when one considers the slight anatomic connection between the scalp and the encephalon, it is difficult to conceive how this external blister can act on the parts within the cranium.

Frequently two or three months are required for entire recovery of the patient, so that he can resume some occupation; and for a yet longer period, limited exercise of the body and mind should be enjoined.

#### SHALL FRACTURE AT THE LOWER END OF THE HUMERUS BE TREATED IN THE FLEXED OR EXTENDED POSITION.

OSCAR H. ALLIS, M.D.

SURGEON TO THE PRESBYTERIAN HOSPITAL, PHILADELPHIA, PA.

As only ten minutes are allotted to this paper the author can not enter into any defense of the principles herein advocated. For a fuller discussion, the reader is referred to the annals of the Anatomical and Surgical Society, Brooklyn, Vol. II, No. 8, 1880. Reprints of the article therein contained will be cheerfully sent to any one interested in the subject, by addressing the author, 1604 Spruce Street. For alleged malpractice, with verdict for the defendant, see paper by Dr. C. E. Kurtz, Trans. College of Physicians of Philadelphia, Pa.

The advantages claimed for the rectangular position are:

1. That it is convenient, the patient can be up and about, enjoying his freedom.
2. That if ankylosis supervenes, the rectangular position furnishes the most useful stiff elbow.

In regard to the first point, viz., "that it is convenient," I have simply to say that the argument has far more consideration from the profession than it is entitled to. The vital question is, In what position can a fracture be treated that will yield the best and most perfect results? It was a wise remark of the late Dr. Levis that there was no good reason why a person should not as properly go to bed for a fractured clavicle as for a fractured femur. In the treatment of fractures of the extremities the recumbent posture is in the highest degree favorable to the

earliest attainable decline of inflammatory processes.

The chief, and as some say unanswerable argument, in defense of the flexed position is, that it is the most favorable if ankylosis takes place; this is true but it is also true that only a small percentage of fractures at the lower end of the humerus result in stiff joints, and of these the injuries are from direct crushes, in which the fragments are comminuted, or the injury compound. In my experience the majority of elbow fractures in childhood are due to indirect violence, as falls, and in this class no ankylosis is likely to follow.

Whatever advantages may be claimed for the rectangular treatment, these should be carefully weighed with the disadvantages, if such there be. One thing is certain that deformity and loss of full function is apt to attend injuries at the elbow. Is the deformity due to the mode of treatment?

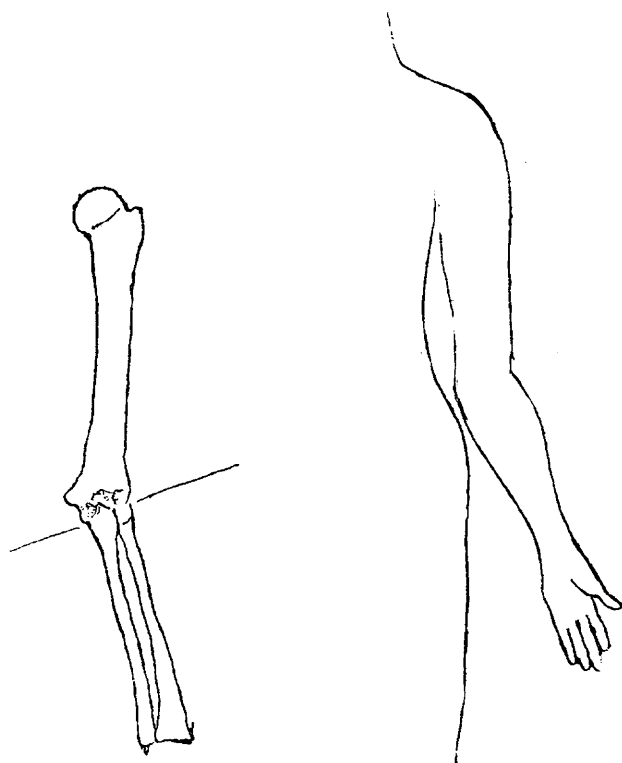


FIG. 1.—Note the length of the internal condyle, and contrast the axis of the shaft to the humerus with the axis of the articular surface.

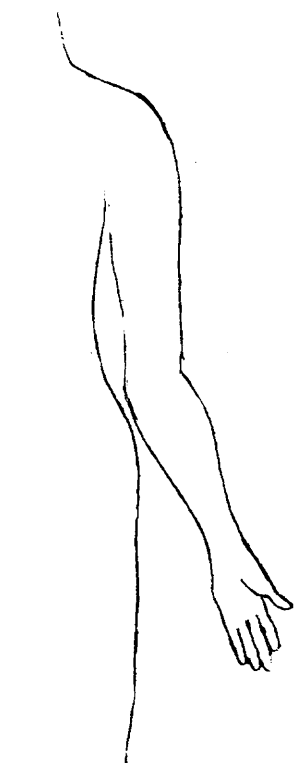


FIG. 2.—Note the support obtained by resting the elbow against the side of the pelvis, especially serviceable in weight carrying.

Neither the upper nor lower extremity is straight. In the humerus and femur the inner condyle extends below the level of the outer condyle, hence the long axis of the humerus does not agree with the long axis of the ulna, nor the long axis of the femur with the long axis of the tibia. In the normal extended arm, the limb during supination appears most crooked.

This is best seen in the emaciated. This is nature's own mechanism and the laborer turns it to advantage. When carrying a heavy weight, as a pail of water, he brings the middle of his extended arm against the pelvis, and this throws the weight at a distance from his feet, and does not impede locomotion.

In the treatment of fractures at the lower end of

the humerus, by arbitrary manufactured splints, the tendency is to change the plane of the articular surface. As a single illustration of this I will take a fracture of the internal condyle. In this fracture the condyle is detached from the humerus, but remains attached to the ulna through the lateral ligament, while the outer condyle remains a firm part of the humerus. In the application of an anterior rectangular splint, the bandage that binds the arm to the splint has a tendency to displace upward the broken internal condyle. This is not observed dur-



FIG. 3.—Pathological specimen from Gurlt. Internal condyle displaced upward.

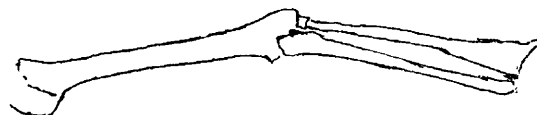


FIG. 4.—Gun-stock deformity seen in horizontal elevation of the limb.

ing the treatment while the arm is bent, but when the cure is effected and the arm extended, a typical gun-stock fracture is noticed.

This deformity is of comparatively trifling disadvantage for the lighter offices of the joint, but it is a very great loss when the carrying function of the limb is taken into consideration.

#### ADVANTAGES OF THE EXTENDED TREATMENT.

1. It permits of the best flow of circulation and is the position best suited to combat excessive inflammation.
2. It permits of inspection of the whole limb, and permits of comparison with its unbroken fellow.
3. It is a position in which the dressing can be applied with ease and simplicity.
4. In this position if either condyle is unbroken we have a natural splint, by means of which the natural articular surface can be preserved.
5. It is the position in which we dress fractures of the condyles of the femur, in which we get perfect joints with full range of motion.

#### TREATMENT IN THE EXTENDED POSITION.

In the treatment of fractures at the lower end of the humerus, no manufactured splints are ever required. Dr. Powers, of New York, has had excellent results in treating fractures of the elbow at right angles, but he never uses manufactured splints. He invariably uses plastic material, which he molds to the limbs.



FIG. 5.—Note the loss of support due to the altered articular axis of the lower end of the humerus. Elbow can not rest against the pelvis.

If I have a skilled assistant, I usually hold the limb extended and ask him to apply the dressing. Otherwise I place the limb in the care of attendants and apply the dressing myself. A first dressing should always make provision for swelling. Hence I either apply cotton or an elastic substance above and below the point of fracture, or lap about it pieces of flannel saturated in lead water and laudanum. The patient is then placed in bed and the limb made to rest comfortably upon a pillow. The renewal of the dressings for the first week must be left to circumstances. If dressed dry and the pain rapidly subsides, I often do not disturb the first dressing for a week.

As soon as the swelling subsides sufficiently, I apply a soft bandage directly to the limb. I prefer thin flannel, butter-cloth or the thinnest, coarse-woven cheapest muslin. In applying the bandage I make no reverses, except at the top and bottom when I wish to change the direction of the bandage. I only use the spiral and let the bandage take its own course. By degrees as the bandage runs up and down the limb, the whole is covered in. This mode of applying the bandage is immeasurably superior to the spiral-reverse, which latter creases the skin and slips. When the limb is properly dressed with the spiral, the bandage alone makes an excellent splint. On completing the bandage, a glutenous paste may be rubbed into the outer layer, or adhesive plaster may be made to cover in the bandage. Such a dressing will permit of easy motion without displacement.

Usually after the swelling subsides, the patient will be able to rise and walk about, but the arm must be left hanging and not bent and put in a sling. If the hanging arm is painful, the patient should again assume the recumbent or the semi-recumbent position.

As to passive motion I have only time to add that if begun too early or with too much spirit, the result will be to protract the cure. Only gentle passive motion in the latter half of the treatment will be conducive to early functional return. The complete range of motion is often delayed for months after the cure is effected.

## FRACTURE OF THE LOWER END OF THE RADIUS.

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BY P. S. CONNER, M.D.

CINCINNATI, OHIO.

As ordinarily met with, fracture of the lower end of the radius, is the result of "cross-breaking strain" consequent upon over-extension of the hand upon the forearm. Force received upon the palm, carried up through the os magnum and the projecting line of junction of the scaphoid and semi-lunar, if sufficient to break the radius must do so in a more or less longitudinal direction, not transversely. Over-bending of the forearm bones may, and at times does, cause fracture of the radius, which is approximately transverse; but the level of the break is always higher than that of the common "wrist fractures."

Experimentally, by over-extension, every variety of the fracture under consideration can be produced; from the simple crack through the articulating extremity to a separation and displacement of the car-

pal fragment equal to that of the most severe injury coming under professional care. Whatever its degree, displacement is due to the secondary action of the anterior radio-carpal ligament upon the fragment already dragged off from the radius; and it is in the majority of cases largely maintained by the binding force of an untorn dorsal strip of periosteum, as originally shown by Pilcher. Much has been written, and more said, respecting impaction of the dorsal compact edge of the lower end of the upper fragment in the cancellous upper surface of the lower fragment; and proof of its existence has been found in inability to properly adjust the fragments by traction upon the hand in the direction of the long axis of the forearm. But, unless it may be under very unusual conditions, a force sufficient to pin the upper fragment in the lower would be sufficient to, and would split the lower fragment into two or more pieces and consequently prevent impaction. The resistance to replacement by direct extension is, in the great majority of cases, probably in all, not in any fixation of the upper in the lower fragment, but in the untorn periosteal band already mentioned. Only when such band is absent because of complete laceration at the time of injury, or it has been torn by the dragging force exerted through the hand, can proper apposition be secured by such manipulation. But, if instead of pulling upon the hand it be over-extended, brought, in other words, in the position in which the fracture occurred, any existing periosteal band is at once relaxed; and moderate pressure upon the upper end of the lower fragment is sufficient to carry this fragment into its proper place, at times with a very audible snap. Little or no pain is produced, no anesthetic is required; the securing of proper apposition of the fragments is the work of but a few seconds. Personally, I have never had any difficulty in thus adjusting a case coming under care within twenty-four hours after receipt of the injury. If there is, as there certainly is at times, a fixation of the ulnar styloid process under, or in the posterior annular ligament, such process will be set free either by simple over-extension, or by such combined with rotation. Once properly apposed, there is practically nothing other than outside violence to produce a secondary displacement. The weight of the dropped hand strongly tends to maintain apposition, and additional security is afforded through the action of the tendons crossing over the line of break on the palmar and dorsal surface. The supinator longus through its styloid attachment, does without doubt act upon the lower fragment, but such action is too feeble to cause displacement.

Proper adjustment (and the earlier it is effected the better) will prevent or greatly limit effusions, exudations and adhesions. The unfortunate result, at times observed, which has been attributed generally to age, to rheumatic or gouty habit, to too short or too long employment of splints, to improper conduct on the part of the patient, or carelessness on the part of the doctor, is commonly, very possibly always, due to imperfect adjustment at the time of the original dressing; the displaced lower end of the upper fragment making such pressure upon the soft parts upon the palmar surface near the wrist as to interfere with both arterial and venous circulation, especially the latter, and that not only directly but indirectly through the induced nervous disturbance. Under such circumstances the ordinary treatment by splint