

excellent manual, just published—may be fairly deduced:—

*General conclusions.*—1. Injuries of the head are of importance only so far as they involve the cranial contents—a simple uncomplicated case of fracture of the skull being of less danger than a general concussion of the brain.

2. A slight concussion of the brain, associated or not with a fracture of the vault or the base of the skull, which manifests itself by a slight or passing suspension of the cerebral functions, generally does well.

3. A severe concussion or shaking of the brain, associated or not with a fracture of the vault or the base of the skull, is liable to produce contusion or laceration of the brain substance, either upon its surface or within its ventricles, with more or less extravasation of blood, and when the vessels are diseased, a copious hemorrhage often follows a slight injury.

4. In cases of concussion of the brain, the cerebral structure is at least as much injured by *contre-coup* as at the seat of injury, the base of the brain suffering the most. Fracture by *contre-coup* does not take place.

5. A fall upon the vertex from a height, or a blow upon the head from a blunt instrument, may be followed by fracture of the skull, or not; such an accident produces, as a rule, a general concussion of the brain, with such complications as contusion or laceration of the brain, and effusion of blood either upon its surface or within the ventricles.

6. Falls upon a pointed object, and blows with a sharp instrument, as a rule, are followed by a local fracture; and if the brain be injured, it is at the seat of injury. As a consequence, the symptoms may be accounted for by local causes only, and the surgical treatment directed by local considerations.

7. When symptoms of compression of the brain immediately follow an injury to the skull produced by a fall from a height, or a blow from a heavy and blunt instrument, the cerebral injury will be general, the brain contused and lacerated, particularly at the base by *contre-coup*, and if extravasated blood be found external to the dura mater, blood will also be found upon the surface of the brain, or within its membranes.

8. If symptoms of compression of the brain follow a local injury produced by a fall upon a sharp object, or a quick blow from a pointed one, such symptoms, as a rule, are produced by local causes, such as depressed bone, or extravasation of blood from rupture of the middle meningeal artery.

9. Such local injuries, when they give rise to marked or persistent symptoms, should be treated by elevation of the depressed bone: but if no general symptoms are present, unless the bone be comminuted and can be easily removed, no operation is indicated; a local pressure of the brain by bone, although severe, uncomplicated with symptoms, generally doing well.

10. When compression of the brain follows a local injury over the course of the meningeal artery

after an interval of time, and when reaction has been established, although no depressed bone be present, the operation of trephining may be performed with a chance of success, the blood often, however, passing downwards towards the base, where the operator cannot relieve.

11. When compression of the brain follows, as a secondary result, a general injury—although that compression is evidently produced by extravasation of blood—the operation of trephining is useless, if not injurious; for although blood may be effused from rupture of a meningeal artery, there will certainly be found some contusion or laceration of the brain itself, or extravasation beneath its membranes, which the operation cannot relieve.

12. Encephalic inflammation may follow any concussion or injury to the brain, however slight, whether complicated with fracture or not; and the danger of such a result is in proportion to the encephalic injury. In cases of contusion or laceration of the brain, with extravasation of blood, it is almost sure to follow, and, as a rule, it will produce a fatal termination. This inflammation may appear within a few hours of the accident, or it may be postponed for some days; it may be very rapid in its course, or very insidious in its nature. If the brain itself is the seat of the disease, it is generally insidious, giving rise to either a diffused or local abscess; but if the membranes are involved, effusion, convulsions, coma and death will rapidly take place.

13. The operation of trephining is perfectly useless in cases of severe concussion of the brain, whether, associated or not with fracture, although it may relieve compression arising from local conditions; for the brain is generally injured by *contre-coup* at its base or in positions where no operation can be of benefit, but must prove injurious.

14. The operation of trephining is only of value in local injuries to the skull, when associated with symptoms of compression from depression of bone, or the local extravasation of blood between the bone and the dura mater.

15. Fracture of the base of the skull may take place alone, and be marked by only special symptoms; they may be associated with, and are generally found in, all cases of severe fracture of the vault, when produced by a heavy fall or blow, the fissures radiating downwards in a direction parallel to the forces employed.

16. Fractures of the base may be complicated with encephalic injuries similar to fractures of the vault, and may consequently be manifested by general symptoms as well as special ones; in severe cases the former completely masking the latter. The injury, however, may generally be diagnosed, the mode of its occurrence indicating the probability of its nature.

17. All injuries to the head should be treated with extreme care, and regarded as serious. Rest in the horizontal posture, freedom from excitement, bland, nutritious, unstimulating food are essentials, under all circumstances, the great principle of practice being to ward off excess of reaction or inflammation of the cranial contents.