

operation as an exploration, being prepared to meet the indication upon anything which may be discovered within.

While the cerebellum is, in the future, to be by no means exempt from surgical invasion, we are, nevertheless, not here bewildered by such a wealth of topographical boundaries and divisions. It lies entirely beneath the tentorium, which divides to form the lateral sinus. This sinus follows a line nearly corresponding to the superior curved line of the external occipital surface, but a little below it. It would be best in operating to allow, at all events, at first, half an inch, and even then to perforate the bone with caution. It must also be remembered that the torcular Herophili is seldom exactly centrally situated—most commonly a little to the left—and that the region three-quarters of an inch on either side of the middle line had better be avoided, at least for the first perforation.

Other facts to be borne in mind are that children and the aged have no diploë; that the crania of the aged may be extremely thin; that the frontal sinus is not to be ignored in operating in its neighborhood; that the superior longitudinal sinus is beneath the middle line of the vault; and that the middle meningeal artery lies about an inch and a quarter back of the external angle of the orbit, and is sometimes almost buried in a bony channel.

*When and Where can One Trephine with Safety and Where should One Avoid Perforation of the Bone?*

Probably the safest rule to follow is that the first application of the trephine should be over those well known areas of the skull which do not overlie large vascular channels, as, for instance, those points where one may wound the middle meningeal artery, the superior longitudinal sinus, the lateral sinus, the occipital sinus, and so forth; but, after an opening has been made at points free from this danger, it may be extended in any direction, to any required extent, with a feeling of security, inasmuch as the larger the opening, the better our ability to cope with hæmorrhage, no matter what its source. Hæmorrhage from the middle meningeal artery can, under these circumstances, be easily arrested. Our greatest hesitation would be with regard to opening one of the sinuses of the skull. Two dangers attend such an accident—one of fatal

air embolism, as has happened to Volkmann in the removal of a sarcoma of the vertex of the skull; the other, that of profuse hæmorrhage. The former danger is almost a theoretical one, since operations on the brain proper are not nearly so likely to lead to this accident as lesions involving the bony skull itself. The latter is one which experience has taught is by no means fatal; for, should hæmorrhage thus occur from a sinus, the sinus itself may be plugged, or its wound may be closed with a fine needle and suture. Indeed, Bergmann entirely removed a part of the superior longitudinal sinus in one of his cases. The researches of Schellmann have shown that the integrity of one sinus at least may be destroyed without any serious effect upon the brain itself; though, theoretically, one must perhaps hold to the opinion that the liability to cedema of the brain will thereby be increased.

*Parts of the Brain which may be considered as Proper Fields for Operation.*

A variety of cases, some slight, some terribly severe in their destructive effects, have shown that, after all, there is but a comparatively small portion of the brain which can not be considered, in some sense, superfluous. We find that, after destruction of one part, another part, by a species of substitution, takes up its action; and we find from experiments on animals that large portions of more than one hemisphere may be removed without serious consequences. We may reasonably say that a tumor or an abscess in the brain, whose boundaries are continually enlarging, and which is consequently causing an increasing amount of destruction, is doing more harm than can be done by the surgeon's knife, which shall judiciously remove it, and thus take away the possibilities of harm caused by such a lesion. We may say, almost without question, that any part of the hemispheres is amenable to surgical attack, and at least a large portion of the cerebellum; only the basal ganglia, the pons, and the medulla can now be considered sacred, partly on account of their inaccessibility, partly on account of their primary functions. Further and more extensive experience may in some slight degree modify this statement, but it seems as though we were justified in making it with a reasonable degree of assurance. If we have any doubts in the matter at all, they are with reference to the cerebellum. The