

along an axis parallel to such a line, and I shall show how such mechanical effects can, as far as possible, be avoided during operations on the basal parts of the brain.

(b) PRODUCTION OF VON BERGMANN'S OEDEMA CEREBRI.

The surgery of the central nervous system has been enriched by many contributions that have been made to it by von Bergmann, but on no point more particularly than that of the causation and frequency of oedema of the nerve tissues (see especially his *Kopfverletzungen*, and, later, *Die chirurgische Behandlung der Hirnkrankheiten*, 1889, p. 118, *et seq.*) The readiness with which the cerebrum and cerebellum become oedematous is remarkable, but the circumstances under which it happens are not at all easy to understand, and the facts of a large series of cases do not fall into line with von Bergmann's generalization—namely, that oedema necessarily occurs whenever the skull is freely opened. Thus, after the second stage of an extirpation in which the skull has been very freely opened and a tumour removed, there may be only a very moderate degree of oedema of the hemisphere operated upon, which, like all traumatic oedema of the brain, arrives at its maximum in three or four days, and disappears without any complication. On the other hand, when the skull has been freely opened in the first stage and the dura mater left intact, if the pressure of the growth is considerable, that may be accentuated by the development of a markedly oedematous condition around the focus of pressure. It is, of course, quite comprehensible that this is owing to the fact that a slight relative increase of tension may unfavourably affect the walls of the cerebral blood vessels, which are still under compression, and bring about a Cohnheim effect. That this does occasionally occur is proved by the very rare phenomenon of transudation of the red blood corpuscles into the oedematous tissue, of which the following is an example, and as it is unique in my experience I quote it here:

The patient, a lady of 52 years of age, had had symptoms of cerebellar tumour for several years, and a varying degree of optic neuritis had been known to exist for more than two years. The case being referred to me, I opened the cerebellar region, and finding extreme tension, decided to relieve it by a small opening in the dura. This revealed a thin-walled simple cyst, which I punctured and removed. After a preliminary stage (three to four hours) of moderate shock, the patient gradually developed remarkable symptoms of deepening coma, Cheyne Stokes respiration, and a rising temperature. These symptoms terminated fatally in thirty-six hours from the operation. *Post-mortem* examination showed that the cyst was completely removed, and that