Georg Schaltenbrand

was one of the most prodigious and internationally renowned neurologists in post war Germany. Trained by Max Nonne in Hamburg, he early gained international experience during stays in The Netherlands, the United States, and China. In 1935 quarrels with Nazi representatives forced him to go to Würzburg, where he built an own neurological service. This unit subsequently grew up to an internationally recognized center. Schaltenbrand scientifically contributed to the organization and diagnostics of the motor system, to the physiology and pathology of the cerebrospinal fluid system, and to multiple sclerosis. His textbook and atlas on stereotaxy, authored with his American friend Percival Bailey in 1959, remained a standard reference in stereotactic surgery until recent years. Only late after his death his unethical scientific activities during wartime came to common public knowledge. In an attempt to confirm his hypothesis of an infectious aetiology of multiple sclerosis, he had inoculated mentally handicapped and other severely ill patients with cerebrospinal fluid of apes putatively suffering from multiple sclerosis and also of patients with verified multiple sclerosis. He explicitly accepted the risk of causing some morbidity and even mortality in his study persons. He published his experiments in several articles and oral presentations since 1940, and, comprehensively, in a monograph 1943. Although commented as early as 1949, his dubious studies were widely ignored until a critical review appeared in an American journal in 1994. Since then, the studies are frequently cited as a typical example of Nazi medical science. However, with due regard to the historical background and the personality of Schaltenbrand his experiments should rather be brought into line with a worldwide practice at that time of using patients as study objects without asking for their consent. As a response to this practice several laws had been adopted, beginning in 1900, carried on in 1931 and culminating 1947 in the Nuremberg code. As a historical fact, not only before but also after World War II these legal acts were widely ignored and became only gradually accepted.

In 1959, Schaltenbrand and Bailey published a brain atlas whose coordinate system seems to derive from Jean Talairach Talairach's space although it shows slight differences. As a matter of fact, the Talairach method allows for proportional measurement of the relative distances of the various nuclei from standard reference points by using a double grid system on the single patient: the localization is more tailored to the single patient, but it requires more invasive imaging techniques. On the other hand, the Schaltenbrand atlas is more essential but reports the distances in a more rigid way, based on the measurements provided on microscope sections and without the proportional system verification. The frontal sections are displayed four per page at 4× magnification, with a scaled and labelled transparent overlay attached to each page. The 16 sections, each with the thickness of 1–4 mm and all cut from the same brain, span the region from 16.5 mm anterior to 16.5 mm posterior to the midcommissural plane. The sagittal series is presented in the same manner, but the sections on each page are one or two. The 18 sections are cut at 0.5–2.5 mm intervals, spanning the region between 2.0 and 27.5 mm lateral to the midline. Schaltenbrand and Bailey's myelin-stained sagittal series were widely used because the majority of functional stereotactic operations involve a transfrontal (precoronal) approach to the thalamus or upper midbrain through a parasagittal entry point. The horizontal series, such as the frontal one, is presented at four planes per page at 4× magnification. The 20 sections, all cut from a single brain, span the region from 16 mm above to 9.5 mm below the midcommissural point [1)]

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Schaltenbrand G, Bailey P. Introduction to Stereotaxis with an Atlas of Human Brain. Stuttgart 1959