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## Flourens, Pierre

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Without Abstract

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### Basic Biographical Information

Flourens (1794–1867) was born in Maureilhan, France. Somewhat of a prodigy, he earned a medical degree at the age of 19 from the *Faculté de Médecine* at Montpellier. Subsequently, Flourens became a protégé of Georges Cuvier (1769–1832), the eminent scientific paleontologist and leader of the comparative method in organismal biology. Under Cuvier's guidance, Flourens began the work for which he is most recognized, comparative experimental brain research. Flourens articles on brain research in 1822 and 1823 were presented to the *Académie des Sciences* by Cuvier. These were then assembled together with a newly written preface to become Flourens' first important book, *Recherches expérimentales sur les propriétés et les fonctions du système nerveux dans les animaux vertébrés* (1824). By 1828, with Cuvier's sponsorship, Flourens was admitted to the *Académie des Sciences*, and upon Cuvier's death in 1833 and by his recommendation, Flourens was appointed *secrétaire perpétuel* of the *Académie*. In 1840, he was elected over Victor Hugo to the *Académie de France*. Flourens soon had a professorship in comparative anatomy at the museum of the Jardin de Roi, and in 1855, he was appointed professor of natural history in the College de France where he remained until his death (Pearce 2008).

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### Major Accomplishments/Contributions

Flourens is best remembered for his pioneering brain-behavior research and for his vigorous opposition to phrenology which contributed to the demise of phrenology's scientific acceptability.

Among many others, Boring (*1950*) wrote that Flourens was the first comparative, experimental brain researcher, and he is usually credited with developing the method of experimental ablation. Like many alleged “firsts,” Flourens’ brain ablation research was well preceded by sophisticated experimental brain research by another Frenchman, François Pourfour du Petit (1664–1741) (Kruger and Swanson *2007*; Neuberger *1981*). Nevertheless, Flourens impact on brain physiology was such that Neuberger titled his book, *The Historical Development of Brain and Spinal Cord Physiology Before Flourens*, obviously regarding Flourens to be a transformational person in that field.

Flourens was a meticulous surgeon and a careful behavioral observer, and he used his ablation and observational skills on animals such as frogs, pigeons, and rabbits to determine some of the primary functions of the major regions of the brain. His behavioral observations did not include behavioral experiments, an innovation that was left to Shepherd Ivory Franz (1874–1933) in 1902. But Flourens’ pre- and post-surgical observations enabled him to identify, reasonably correctly, the predominant functions of structures such as the cerebrum, midbrain colliculi, cerebellum, and medulla oblongata. Referring to the structures’ predominant functions, he called them their *action propre*, but his overriding conclusion was that they acted in common (*action commune*); that is, most actions involve most if not all regions of the brain.

Armed with careful experimental data and with a conclusion (*action commune*) that clearly questioned the extreme localizationist views of brain function advocated by the phrenologists (notably Franz Josef Gall and J. G. Spurzheim), Flourens was in a unique position to attack phrenology. Such an attack was highly desired by the French in general, as no less than Emperor Napoleon Bonaparte encouraged Flourens in his research and criticism of phrenology. Phrenology was highly susceptible to criticism, as its methods were questionable and were tied to questionable functional categories, namely, a list of mental faculties that originated with philosophers, Thomas Reid and Dugald Stewart, who did not base them on brain research. Furthermore, the “brain” evidence used by Gall and Spurzheim was derived from bumps on, and recesses in, the skull. While, theoretically, that might have provided for legitimate correlational research (e.g., correlating bumps and faculties) the method was poorly employed. A single case of dubious validity might be the basis for assigning a particular faculty to a particular area of the brain. Before describing how Flourens criticism destroyed phrenology, it is only fair to say that Gall and Spurzheim made many legitimate contributions to neuroanatomy, that Gall’s clinical observations led to the discovery of the location of the human speech in the cerebral cortex, and that despite the failure of phrenology, Gall’s advocacy for localization of brain function continues to have significant impact.

Flourens attack on phrenology began with his 1824 book (see above). His careful experimental method compared to the deficiencies of phrenological research was obvious. Not only did Flourens provide a clearer basis for interpreting brain function, he provided a strongly contrasting theory of brain function. Additionally, due to the questionable practices of many phrenologists, phrenology developed the reputation of charlatanism. It became easy for the majority of medical and scientific researchers to disavow phrenology and all who were associated with it. Flourens best remembered attack on phrenology was his book *Examen de la phrenology* (1842) where he displayed writing that was admirable in its precision, brevity, and clarity in identifying all that

was wrong with phrenology. He also left a legacy of good advice to be followed in scientific writing. In the Preface he wrote, *J'ai voulu être court. Il y a un grand secret pour être court: c'est d'être clair* (I wish to be brief. It is a grand secret to be brief is to be clear). Flourens' views prevailed until 1860 when localization of function experienced a revival following Ernst Auburtin's, Jean-Baptiste Bouillard's, and Paul Broca's discovery of the human speech center in the cerebral cortex.

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## See Also

[Boring, E. G.](#)

[Broca, Pierre Paul](#)

[Comparative Psychology](#)

[Fowler, Orson](#)

[Gall, Franz Josef](#)

[Lashley, Carl](#)

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