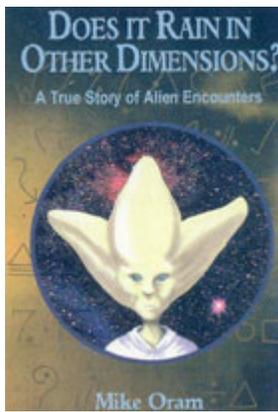


Big brains, small brains : so what?

It is probably not a coincidence if most extraterrestrials to appear on the big screen have an enormously developed skull : they could find the way of joining the earth from their remote planet while we were not even convinced of their existence. They are therefore much more intelligent than we should never hope to be, and their morphology proves without doubt that the intelligence is located within their big skull, that is to say within their big brain (an extraterrestrial with a tiny skull would never be a box office success, and should only pose as a mental defective quickly chucked away on the earth by its compatriots).

In the last centuries, many scientist believed – and some of them go on believing – in a direct correlation between brain volume and intelligence. Let us summarize some data on this question.

Some big brains, some small brain



We could find in medical literature some classical examples of famous men whose brain was considered as above the average weight (Topinard, 1884; Dejerine, 1895; Sperino, 1900) : the German physicist Ernst-Werner von Siemens (1600 g), the Scottish physician John Abercromby (1785 g), the French naturalist Georges Cuvier (1830 g), the Russian novelist Ivan Sergiévitich Tourgueniev (2012 g), the English statesman Richard Cromwell (2229 g), and, probably at the top of the list, the English poet George Gordon, otherwise known as Lord Byron (2238 g).

On the other hand, some celebrities are remembered by anthropologists for their comparatively small brain : the Scottish writer James Grant (1289 g), the German anatomist Friedrich Tiedemann (1254 g), the French statesman Léon Gambetta (1246 g), the German physician Emil Harless (1238 g), the German phrenologist Franz Joseph Gall (1198 g), and, coming in at the tail end, the French writer Anatole France (1000 g).

How to weigh a brain?

In 1970, the South-African paleoanthropologist Tobias published a paper in the *American Journal of Anthropology*, proving that the weight of a brain depends on at least fourteen parameters : the time between the death and the weighing, the exact location of what has been chosen as the anatomical junction of the brain and spinal cord, the taking into account of the meninges, the fact that the brain may have been kept in a solution, the room temperature, etc. (cited by Claessens, 1990, p. 34). These difficulties probably account for the differences which we could find in what should be considered as the average weight of the human brain : from 1375 grams (Leonhardt et al., 1987) to 1530 (Cabanne et Bonenfant, 1986).

Brain volume and intelligence?

Three observations to conclude this short contribution. Firstly, a sentence written by the French celebrated neuroanatomist Paul Broca in 1861, at a time when intelligence was regarded as impossible under 1133 grams of central nervous tissue in men, and 970 in women : « Minded people could not think of sizing intelligence by the brain volume » (cited by Schiller, 1990). Secondly, a sharp but realistic remark of the Belgian molecular biologist Michel Claessens :

« However odd it may seem, it is probably about intelligence that has been told the largest number of stupidities » (Claessens, 1990). Thirdly, let us remember that the French writer Anatole France, with one of the lightest brains in the history of mankind, won the Nobel Prize of literature in 1921 with his « Le crime de Sylvestre Bonnard ».
A word to the wise!

Suggested readings

Claessens O. (1990) Les dessous de l'intelligence, ou l'illusion scientifique. Paris : Imago.

Bibliography

- Cabanne F., Bonenfant J.L. (1986) Anatomie pathologique. Québec, Paris : Presses de l'Université Laval, Maloine S.A., 2^e édition, p. 1446.
Dejerine J. (1895) Anatomie des centres nerveux. Paris : Rueff et Cie, vol. 1, pp. 234-238.
Leonhardt H., Töndury G., Zilles K. (1987) Anatomie des Menschen. Band III. Nervensystem, Sinnesorgane. Stuttgart New York; Georg Thieme, p. 120.
Schiller F. (1990) Paul Broca. Explorateur du cerveau. Paris : Odile Jacob, p. 230.
Sperino G. (1900) L'encefalo dell'anatomico Carlo Giacomini. Torino : Uninoe tipografico-editrice.
Topinard P. (1884) L'anthropologie. Paris : C. Reinwald, 4^e édition, pp. 122-125.

Illustration

Original pictorial wrappers of Mike Oram's Does it train in other dimensions? Winchester : O. Books, 2007.

Régis OLRÉY, MD
Professeur
Département de chimie-biologie
Université du Québec à Trois-Rivières