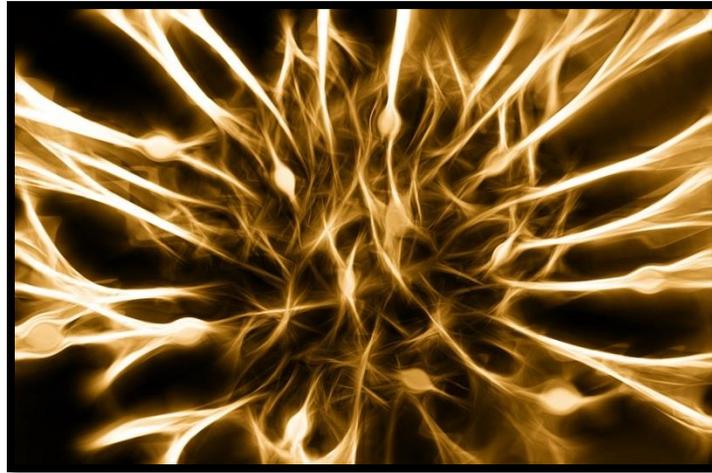


The Montreal Procedure



The brain was a mystery to humans for much of our history. How could a single organ produce complex thought and determine things such as personality, ideas, and memories? Although scientists in the 19th and early 20th century understood the general structure of the brain, there was very little insight into exactly how it worked. Much of this problem was due to the fact that the brain's **functions** were impossible to observe without the very high probability of its owner dying. By the 1930s, however, technology and medicine had advanced to the point where observing the brain's functioning in a living person was indeed a possibility.

Dr. Wilder Penfield and Dr. Herbert Jasper invented the Montreal procedure in the 1930s. **This** was a revolutionary method of surgery where Penfield and Jasper would operate on the brain of an epileptic patient, destroying the cells where the seizures began. The doctors used local anesthetics, which are special drugs that eliminated a patient's ability to feel pain in regions of the body as opposed to rendering him or her **entirely** unconscious. Because the patient was not unconscious during the surgery, the doctors could **stimulate** parts of the brain using electricity and the patient could tell the doctors which sensations came about due to the stimulation. This would help the doctors find the correct area of the brain and eliminate the areas that produced seizures.

Due to the success of the Montreal procedure, Dr. Penfield and his colleagues learned a great deal about the functioning of the human brain, including which parts of the brain produce certain thoughts and how they store memories. For example, one woman, who suffered from epileptic seizures, reported smelling burnt toast before having an attack. Dr. Penfield attempted to find this area of the brain by asking the woman when she could smell burnt toast while stimulating parts of the brain. This **procedure** and the research that came from it allowed psychologists a great number of insights into where memory is stored. This research has developed into a field of research called "functional anatomy". Penfield also found areas in the brain responsible for producing language, movement, and many other important functions.



1. According to the article, when did it become possible to observe the brain functioning in a living person?
 - a) in the 18th century
 - b) in the 19th century
 - c) by the 1930s
 - d) by the 1390s
2. According to the article, why didn't humans understand how the brain functioned until the 1930s?
 - a) the field of functional anatomy had not yet been invented
 - b) it was impossible to see how the brain functioned without the person being observed dying
 - c) Dr. Penfield did not understand how to stimulate the brain at first
 - d) scientists had not yet discovered that only people could have their brain functions examined
3. The word "functions" in paragraph 1 is closest in meaning to:
 - a) behavior
 - b) mission
 - c) inaction
 - d) appliance
4. The word "this" in paragraph 2 refers to:
 - a) the 1930s
 - b) a local anesthetic
 - c) a special drug
 - d) the Montreal procedure
5. The word "entirely" in paragraph 2 is closest in meaning to:
 - a) just
 - b) wholly
 - c) incompletely
 - d) directly
6. The word "stimulate" in paragraph 2 is closest in meaning to:
 - a) trigger
 - b) seize
 - c) prevent
 - d) calm
7. Why was the use of local anesthetics a key part of the Montreal Procedure?
 - a) The doctors needed the patient to be conscious to receive feedback about which area of the brain was being stimulated.
 - b) The doctors didn't want the patient to feel any pain during the surgery.
 - c) The doctors thought it would be much less dangerous if the patient was unconscious during the surgery.
 - d) Local anesthetic mixed with the brain's chemicals and allowed the doctors to actually see which areas of the brain they were stimulating.
8. The word "procedure" in paragraph 3 is closest in meaning to:
 - a) agenda
 - b) policy
 - c) approach
 - d) idleness
9. Paragraph 3 is about:
 - a) why epileptic seizures need to be treated using the Montreal procedure
 - b) why the smell of burnt toast before having an attack is an indication of an epileptic seizure
 - c) Dr. Penfield and his colleagues discoveries about the functions of the human heart
 - d) Dr. Penfield and his co-workers discoveries about the human brain because of the Montreal procedure
10. What would be a good title for this passage?
 - a) The Birth of Functional Anatomy
 - b) The History of the Montreal Procedure
 - c) A Biography of Dr. Wilder Penfield
 - d) Early Prevention of Seizures in Epileptic Patients

Answers: 1. (c) 2. (b) 3. (a) 4. (d) 5. (b) 6. (a) 7. (a) 8. (c) 9. (d) 10. (a)