

BIOCHEMISTRY

Man's Brain Chemistry

► **MAN'S BRAIN**, in contrast to brains of lower animals, may be as highly differentiated chemically as it is intellectually.

Findings showing this, with their implication for better understanding of the human mind when healthy and when disordered, are coming from research by Dr. Williamina Himwich and associates at Galesburg State Research Hospital, Galesburg, Ill.

Dr. Williamina is the wife of the hospital's director of research, Dr. Harold Himwich.

She is trying to make a chemical map of the human brain, which can be compared to maps of the brain showing anatomical structures and nervous system activities and brain wave activities.

The chemical composition of the brain is different in different areas. The amount of a chemical, such as nitrogen, found in the fore part of the brain differs from that found at the back of the brain. While such differences also are found in animal brains, they are very much less than those found in human brains.

This gives Dr. Himwich the idea that man's brain may be as highly differentiated chemically as it is intellectually.

A small structure near the base of the brain, called the caudate nucleus, contains exceedingly large amounts of the enzyme, cholinesterase. These large amounts of the enzyme are found in the caudate nucleus of all species examined, such as rats, rabbits and man.

Scientists do not yet know what this means, although they do know that the enzyme destroys the nerve chemical acetylcholine and normally acts to prevent dangerously large accumulations of it at nerve endings.

Dr. Williamina Himwich showed a blue-eared rabbit to science writers visiting the Galesburg and other mental hospital research centers under the auspices of the National Mental Health Committee with a grant from Smith, Kline and French. (See p. 103 and SNL, Feb. 11, pp. 84 and 89 for related stories.)

The rabbit also had blue eyes, nose and

mouth because the dye, methylene blue, had been injected into it. But Dr. Himwich said, if we could look into its brain, we would see no blue color there except perhaps in the lining of the blood vessels. This is because a mechanism known as the blood-brain barrier stops passage of most chemicals into the brain.

Only part of the brain that would be blue would be the hypothalamus, at the place where the stalk of the pituitary gland enters. Dr. Himwich and her group are trying now to find whether other chemicals, such as ether and the nerve gas-like chemical, DFP, and glutamic acid, believed to increase intelligence, can affect this region of the hypothalamus or penetrate the blood brain barrier.

The blood brain barrier is either lacking or undeveloped in new-born human babies and in infant rats. In the rats it develops at ten days of age.

If more can be learned about this structure, it may be possible to find ways of getting drugs through it into the brain to bring greater healing to sick minds.

Science News Letter, February 18, 1956

PUBLIC HEALTH

Urge Better Sanitation For "Take Out" Foods

► **UNLESS** certain sanitation safeguards are observed, restaurant "take out" foods, vending machine lunches and pre-cooked frozen dinners can be a source of food poisoning.

Charles Senn, sanitation expert at the University of California at Los Angeles School of Public Health and the Los Angeles City Health Department, issued this warning.

"One danger lies in not refrigerating or heating prepared foods properly after purchase," he said. "The most common type of food poisoning results from cooked foods because food poisoning germs can multiply to a danger point in three hours. This applies to restaurant take-out foods."

Demand for pre-cooked foods has become so great plant sanitary facilities have not caught up, Mr. Senn says.

An example is the preparation of frozen meat pies. Well-cooked ingredients are handled by many hands in filling pie shells. At home some housewives merely warm the product in the oven until it "feels right" when punched by a fork. Frequently the pies are not heated long enough to kill food poisoning germs.

Solution to the particular problem is reheating, and thus sterilizing, the meat pie filling before packaging. Long-range answer for all pre-cooked foods lies in heat-sealing and some sort of radiation treatment, Mr. Senn believes.

Science News Letter, February 18, 1956

Questions

CARDIOLOGY—What are six rules for helping heart attack victim? p. 107.

GENERAL SCIENCE—What amount is spent for scientific research by philanthropic organizations? p. 104.

GEOGRAPHY—What new route to the South Pole has been discovered? p. 99.

MEDICINE—What are cancer seeds? p. 102.

METEOROLOGY—What is an index cycle? p. 101.

PSYCHIATRY—How can brain waves be used in diagnosing mental disease? p. 103.

PSYCHOLOGY—How has learning while asleep been shown impractical? p. 102.

PUBLIC HEALTH—What is expected to yield solution to lung cancer problem? p. 100.

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