PSYCHOLOGY

Cruelty From Gray Matter

Experiments indicate that the cerebral cortex of the brain is the seat of unprovoked violence and cruelty. Reason for delinquency may be delayed brain development.

➤ UNPROVOKED ACTS of violence and cruelty, including murder, may be due to delayed growth and development of the brain.

Brain wave studies in which "waves of violence" were discovered are the basis for this new theory. The studies by Dr. Chaskiel Grossman, of the Veterans Administration Hospital in Pittsburgh, were announced by the Veterans Administration.

Many cases of unmotivated violence have been related to abnormal functioning of the brain as shown by the abnormal brain wave recordings, first discovered by University of Illinois scientists in 1951.

Significantly, Dr. Grossman points out, the murder cases involved youngsters who killed a playmate or a parent and were murders described as especially cruel and without provocation.

Until recently, not much was known about the origin of the unusual "violence" brain waves. Dr. Grossman has now been able to reproduce them in animals by blocking the functions of superficial layers of the gray matter covering the brain, called the cerebral cortex. The blocking occurred whenever certain drugs with a depressing action were applied to the cortex. The blocking was not permanent, disappearing as the action of the drug tapered off.

This, Dr. Grossman thinks, points to the gray matter covering the brain, that is, the cerebral cortex, as the place where the violent behavior disorder has its roots.

Previous theory linked unprovoked acts of violence with an epileptic disturbance in the hypothalamus deep within the brain. Dr. Grossman stressed that his study does not support the theory that the abnormal brain wave of violence and the violent behavior are directly caused by epilepsy.

Some violent acts of destruction and murder, he thinks, may be related to a temporary or passing impairment of brain activity caused by a sudden blocking of the functions of higher discriminatory mechanisms, leaving primitive emotions unchecked.

Or immaturity of the brain, caused by a delay in development of the superficial layers of gray matter, may be the basis of the disorder.

"A close relationship may exist between some cases of social delinquency and delayed physiological and anatomical development of the human brain," Dr. Grossman states. "However, the final evaluation of this relationship and the full appreciation of these subtle development 'defects' are still difficult since our knowledge of the physiology of maturation of the human brain is largely spotty."

Extensive brain wave examinations of a large number of young persons with both normal and abnormal behavior will be necessary to make a statistically significant evaluation possible.

The abnormal brain waves of violence are technically called positive spikes or bursts. They are different from those seen in normal persons or in patients with brain disease from a stroke or from a tumor.

Science News Letter, May 21, 1955

MEDICINE

Devices to Improve Therapy With X-Rays

➤ ADVANTAGES OF improving X-ray therapy by devices to brighten fluoroscopic screens were reported to the Fifth Inter-American Congress of Radiology meeting in Washington by Dr. Russell H. Morgan of the Johns Hopkins Medical School, Baltimore, Md.

These devices will also be of "great value" in radiation treatment, he said.

Fluoroscopic screens are used to make sure that the patient is correctly placed in the X-ray beam, but the clarity is "not too satisfactory," and their use is not widespread.

Intensifiers now under development overcome this and other difficulties, he said.

Science News Letter, May 21, 1955

GEOPHYSICS

Ancient Glaciers Clocked

➤ THE SLOW, relentless movement of the great sheets of ice in the Wisconsin glaciation many thousands of years ago has been clocked and dated. It began 25,000 or more years ago, reached a maximum between 20,000 and 18,000 years ago and was in retreat about 13,000 years ago.

Dating was done with the radiocarbon method. Ages were found for the wood of actual trees knocked down by the advancing ice as it moved from Canada north of the Great Lakes through Ohio, Indiana and into Illinois. An orderly procession of dates was obtained from 27,000 years ago in Canada to 25,000 years ago at Cleveland, Ohio, and 23,000 years ago in Sidney, Ohio, to 19,000 years ago at its southern-most extent.

Dr. Richard Foster Flint of Yale University and Dr. Meyer Rubin of the U. S. Geological Survey, Washington, report the findings to *Science* (May 6). Dr. Hans Suess of the U. S. Geological Survey did the actual dating.

The radiocarbon dating method used is one developed by Dr. Suess which first converts the solid carbon of the wood to acetylene gas. The older radiocarbon method using solid carbon, as developed by Dr. W. F. Libby of the University of Chicago, now on leave to serve with the Atomic Energy Commission, could date samples only as old as 25,000 years. Dr. Suess' gas method pushes back the calendar to 50,000 years although he does not attempt to put an exact date on samples older than about 30,000 years. He just calls them "older than 30,000 years" or "older than 40,000 years."

The new calendar provides scientists with the first accurate dating of the advance of the great Wisconsin ice sheet. Geologists have previously dated its retreat through the study of varves, or layers of silt left behind as the ice melted away.

The series of dates provides evidence of a glacial stage previously unknown to science. This stage occurred longer ago than the known Wisconsin Glacial stage, but was more recent than the Illinoian.

Science News Letter, May 21, 1955

ASTRONOMY

Two Major Observatories Join in Solar Studies

➤ TWO MAJOR observatories, those of Smithsonian Institution and Harvard University, are teaming up to study the explosive energy of the sun and its impact on all layers of the earth's atmosphere.

They plan a concentrated effort to increase man's knowledge of the sun, of practical value in radio communications, weather forecasting and rocket flights, and of great theoretical interest for astronomers and geophysicists.

Dr. Fred L. Whipple, Harvard astronomer, will become director of the Smithsonian's Astrophysical Observatory on July 1, Dr. Leonard Carmichael, secretary of the Smithsonian, announced. Dr. Whipple succeeds L. B. Aldrich, who is retiring.

Headquarters of the Astrophysical Observatory will be moved from Washington to Cambridge, Mass., at the same time, to enable astronomers to coordinate their work.

One of the major contributions of the Smithsonian's Observatory has been the measurement over many years of the amount of solar energy striking the outer edge of the earth's atmosphere, known as the solar constant. This work was originated by Dr. C. G. Abbot, a former secretary of the Smithsonian, and continued by Mr. Aldrich.

Science News Letter, May 21, 1955