PSYCHIATRY-PSYCHOLOGY

Hope For Epilepsy Conquest Found Through Brain Waves

Pattern of Electric Impulses, Now Used for Diagnosis, May Eventually Lead to Discovery of Drug for Cure

TWENTIETH century methods of attack which seem to promise the eventual conquest of epilepsy, the "divine malady" of the ancients which afflicts half a million Americans today, were outlined at a special session of the American Psychiatric Association.

Brain wave records, gift to medicine of modern physics, have shown that during epileptic seizures, or fits, the normal rhythm of the brain's electrical activity is disturbed, Drs. F. A. Gibbs, E. L. Gibbs and W. G. Lennox of Boston reported.

The condition may be compared to certain heart disorders in which the rhythm of the heart's beat is disturbed. Brain cells, like the heart, are always active and they beat out characteristic rhythms which may be traced on paper by leading off, amplifying and recording the tiny electric currents that accompany the activity of each brain cell.

In grand mal epilepsy the electrical activity of the brain may become too fast. In another type of epilepsy it may be too slow. In petit mal epilepsy, it may oscillate between fast and slow.

What is needed to prevent the seizures or fits of epilepsy, the Boston investigators pointed out, is something to stabilize the rate of the brain's activity. This could be done, Dr. Lennox said, by making certain changes in body chemistry, for example by increasing the amount of carbon dioxide in the air that the patient exhales. To accomplish this, he said, the process which causes irritability must be known.

Chemistry of Genes

While brain wave records may show the way to keep the epileptic patient free of attacks, the conquest of epilepsy may result if scientists can find a way to change the chemistry of the genes, Dr. Lennox suggested. The tendency or predisposition to have convulsions or fits, which occur in epilepsy and in other disorders, is, Dr. Lennox said, inherent and fundamental. With a certain stimulus, or even without stimulus, a person who has this predisposition will have a convulsion or fit, and the person without the inherent tendency will not.

The genes, which carry inheritance for epilepsy and other qualities, are now believed to be chemical substances. This gives Dr. Lennox the hope that chemists some day will be able to find a way to change the chemical structure of the gene so as to eliminate the tendency to epilepsy and other convulsions.

The knowledge necessary to achieve this end can only be gained through extensive research. Pointing out that the total amount of money especially designated for epilepsy research amounts to only $12,000 to $15,000 annually, Dr. Lennox urged a fund-raising campaign. As many persons suffer from epilepsy in America, today, he said, as are afflicted with diabetes or active tuberculosis.

Epilepsy Diagnosed

Diagnosis by brain wave records of more than 400 cases of epilepsy was reported by Drs. Herbert H. Jasper, William A. Hawke and Ira C. Nichols of Providence, R. I. Epilepsy was also detected by means of brain wave records in persons not suspected of having the disease.

Study of brain waves, the Providence investigators reported, shows that confusion in mental processes, irritability, impulsiveness and stubbornness are associated with a kind of brain activity found in borderline convulsive states.

New Conception

Brain wave records have led scientists to revise their conceptions of the brain and its activity. The brain, Dr. Jasper, said, can no longer be thought of as an "intricate network of pathways and switches" by which an impulse starting at the sense organ is finally conducted to its destination. The brain is now thought of as being in "continuous, spontaneous activity" and impulses arriving there from the sense nerves are "thrown into a pool of dynamic excitatory processes that form the basis for the electrical brain waves which can be recorded."

The brain is viewed by Dr. Hallowell Davis of Boston as an organization among myriads of individual elements. This newly-discovered physiological organization of the activity of the brain cells is shown by their electrical activity.

Science News Letter, May 15, 1937

MEDICINE

Heart's Work Increased By Injecting Fluid Into Veins

INJECTING large quantities of fluid into the veins of patients, a common procedure after surgical operations, gives the heart 50 per cent. more work to do, Dr. Mark D. Altschule and Dorothy R. Gilligan, of Beth Israel Hospital, Boston, told the American Society for Clinical Investigation meeting in Atlantic City.

They studied patients without heart or blood vessel disease. Although there was no evidence that this added strain is not well tolerated by patients with normal hearts, the Boston investigators inferred that the increase in work might be excessive for patients with heart disease.

A large group of patients with no evidence of heart disease were given intravenous injections of salt or sugar solutions, such as are routinely used, in amounts from 1 to 3 pints. The rates of injection varied. Immediately after the injection, the minute volume output of the heart and the blood volume were increased and the velocity of the blood flow was accelerated. With the more rapid rates of injection or the larger volumes of fluid, significant and even more marked increases in the blood pressure in the veins was observed. In patients who had no signs of heart disease the blood pressure in the veins returned to the control level within about 20 minutes.

Slight increases in pulse rate, blood pressure in the arteries and pulse pressure were observed in about two-fifths of the patients, and changes in heart action in some cases were also seen in electrocardiograms.

Faulty Diet a Danger

The combination of a faulty diet and indiscriminate use of bicarbonate of soda during child-bearing may bring on the dangerous condition of toxemia in prospective mothers, Dr. Maurice B. Strauss of Boston reported.

The specific diet fault is the eating of too little meat and other protein foods

in the face of the unborn baby's requirements for proteins, Dr. Strauss said.

During the last three months before the birth of their children, women whose blood contained normal amounts of protein were able to take either sodium chloride (salt) or sodium bicarbonate without any significant effect, Dr. Strauss found.

When he gave salt or soda to prospective mothers whose blood had less than the normal amount of protein, due partly to eating too little meat, water was retained in their body tissues so that they gained from 5 to 20 pounds in weight within one week's time. At the same time, edema, or watery swelling of the tissues, appeared and the blood pressure rose significantly. Half of these women showed signs of kidney disturbance and one-third of them had symptoms such as precede an attack of convulsions.

Science News Letter, May 15, 1937

ICHTHYOLOGY-HERPETOLOGY

Good Fishing in Panama Lakes; All They Need is Some Fish

PRESIDENT Roosevelt, fisherman, can not now have the pleasure of casting a line over the waters of what might be an angler's paradise—the Panama Canal Zone's two artificial lakes, Gatun and Madden, formed by the damming of the Chagres river.

Here, in the shadow of hills clad in rich tropical forests, disciples of Izaak Walton might taste the joys of tropical freshwater fishing. The only trouble at present is, there are no fish of the right kinds in the lakes.

At the meeting of the American Society of Ichthyologists and Herpetologists in Washington, Dr. Samuel F. Hildebrand of the U. S. Bureau of Fisheries told of the plight of these two lakes.

The most numerous fish that live in them now are enemies rather than attractions to fishermen. They are small fish called characins, which attack and devour other fish. They have thus far defeated attempts to plant fingerlings of desirable game species in the lakes. So the only fishing that is possible at all is for tarpon that wander in from the sea.

Dr. Hildebrand proposed that game fish for future plantings be held at the hatchery until they are from 4 to 6 inches long. "They will then be as large as or larger than the chief local predators and fully acclimated," he said. "Their chances of survival would be much greater."

Suckers in Alaska

There were suckers in Alaska long before the tribe of Dangerous Dan McGrew trimmed their first three-card-monte victims. Long before the Pleistocene ice age, in fact. But these suckers were the real kind, with fins and gills.

At the meeting Dr. Erich M. Schlaikjer of the American Museum of Natural History described the fossil remains of a fish species found in Alaska, which most closely resembles the modern fish known as the long-nosed sucker.

Dr. Schlaikjer also described another fossil Alaskan fish, which belongs to the same family as the Mississippi River species known as the round sunfish. This entire family seems to have originated in North America and never to have emigrated, for fossils have never been found in any other land.

Fish Choosy About Backgrounds

Many kinds of fish can change their skin colors to blend in with the kind of background against which they find themselves. But fish also know how to choose backgrounds that fit their natural colors, declared Drs. Frank A. Brown of the University of Illinois and David H. Thompson of the Illinois Natural History Survey. But the dark fish are the more careful choosers. Subjected to carefully controlled tests, dark fish chose dark backgrounds more often than light fish chose white backgrounds.

● RADIO

May 18, 4:15 p. m. E.S.T.
THE SUPERIOR CHILD—Dr. John E. Bentley of the American University.

May 25, 4:15 p. m., E.S.T.
STAINED GLASS — ART AND SCIENCE —Lawrence Saint, well-known artist of Philadelphia.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

Altitude Makes Difference

Mountaineers are said to differ notably from lowlanders. That this is true among snakes at least, was attested by Charles M. Bogert of the American Museum of Natural History.

One species in the Southwest and Mexico, the patch-nosed snake, has two definitely distinguished races that occupy the same general area on the map. But one is found only in the lowlands, the other above 4,000 feet elevation. Neither is ever found in the other's habitat, though the mountain race forms several upland "islands" in the lowland population.

Where the two populations meet, near the 4,000 foot line, specimens showing intergradation between the characters of the two races are often found.

Science News Letter, May 15, 1937

RADIO

European Television Received In America

RECEPTION of some schedules of television transmitters in London and Berlin at Riverhead, N. Y., was reported to the International Scientific Radio Union and the Institute of Radio Engineers meeting jointly in Washington, D. C.

These signals were 40 to 45 megacycles, which is shorter in wavelength than even the short waves commonly receivable with present short wave sets. H. O. Peterson and D. R. Goddard of R. C. A. Communications explained that daily observations of these transatlantic signals had been made since the middle of January.

Such short waves are generally not considered to travel much farther than the eye can see. But direction measurements showed that at times the signal arrived from the reverse direction over the longest way around the world.

Science News Letter, May 15, 1937

Red color is rare in the flowers of England.