

MEDICINE

New Researches Result in Drugs That May Aid Epilepsy

Brain Waves Basis for New Attack on Disease Leading To Sugar and CO₂ Treatment; Phenol Compounds Tried

THREE DRUGS which promise to be more effective than any now used in treating epileptic seizures and other attacks of convulsions were discovered in experiments reported by Drs. Tracy J. Putnam and H. Houston Merritt of Harvard Medical School. (*Science*, May 29.)

The drugs are diphenylhydantoin, acetophenone and benzophenone. They are related chemically to carbolic acid but are among the acid's less poisonous relatives.

Whether these drugs will prove of value in treating human patients "remains to be seen," the Harvard scientists state. Their effectiveness was determined in tests on cats. Electric shocks which would ordinarily produce convulsions in these animals failed to do so when the animals were given doses of any of the three drugs. Discovery that phenobarbital, one of the modern sleeping medicines, was more effective in preventing convulsions than any of the other barbitals led to trial of other phenol compounds from which the three reported were selected as most effective. Phenobarbital itself was found to be three or four times as effective as sodium bromide.

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SUGAR and carbon dioxide may prove to be sovereign remedies for epilepsy, it appears from results of brain wave studies in the disease reported by Drs. W. G. Lennox, F. A. Gibbs and E. L. Gibbs of Boston at the meeting of the American Neurological Association, in Atlantic City.

Brain wave studies gave the clue that has led to this suggestion of a method of attacking the malady. The wavy lines traced on paper, which show the fluctuations in electrical activity accompanying physiological activity in the brain, make characteristic patterns in epilepsy.

The epilepsy patterns suggested the approach or presence of a veritable brain storm. Further study showed that the difficulty was with the frequencies of the brain waves. The mechanism that regulated these frequencies was apparently out of order. The condition may now be compared to disturbances in heart or breathing rhythm.

The rate-regulating mechanism in the brain, the Harvard scientists stated, "behaves like an undamped pendulum; it tends to overshoot and to oscillate."

Inhalation of carbon dioxide or injections of sugar solution tend to stabilize the brain frequencies and to abolish abnormal brain rhythms.

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PORTRAIT OF A MUSICIAN

Little tree crickets, chirping their insistent songs, keep their filmy wings in strong vibration—for these are their vocal organs. Yet photography with modern apparatus is fast enough to "stop" this rapid motion, as witness this flash-bulb snapshot obtained with 1/50 second exposure at a 4.5 lens aperture by Percy A. Morris of the Peabody Museum of Natural History, Yale University.

working on some mental problem—arithmetic, for example. In epilepsy the rhythm is disturbed. Harvard University investigators, Drs. W. G. Lennox, F. A. Gibbs and E. L. Gibbs, have reported that the disturbance is due to something going wrong with the rate-regulating mechanism—the band leader, in other words, fainted or forgot to pay attention to his job.

In grand mal epilepsy, the brain is sending too fast as seen by the abnormally fast brain wave fluctuations. In psychomotor epilepsy the brain is sending too slow, the brain wave records show. In petit mal epilepsy, the brain alternates between the two, sending first too fast and then too slow.

The Harvard investigators have consequently given the condition a new name, paroxysmal cerebral dysrhythmia, which is something of a jaw-breaker but to a scientist exactly describes the condition.

Inhalation of carbon dioxide or injections of sugar solution, they find, tend to stabilize the rate and abolish abnormal rhythms.

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PHYSIOLOGY

Brain in Epilepsy Like Leaderless Swing Band

EPILEPSY used to be called the "falling disease," but like so many other things, this disease that was known as far back as St. Paul's time has gone modern.

Radio and other methods of modern physics have been applied to its study and it now has a new name that brings it right into the age of swing music. In fact, it might not be going too far to compare the brain in epilepsy to a swing

band without any leader.

The brain, medical scientists have found, has rhythm, just as the heart and breathing apparatus have. Study of so-called brain-waves, the records of the electrical activity that accompanies physiological activity in the brain, show this rhythm.

Normally the brain swings along, sending "hot" or slow according to whether a person is awake or asleep or