

Other abnormalities of the brain waves were found when the problem children were made to take long deep breaths. This "overbreathing" has been observed to start fits in certain epileptics. In more

than half of the problem children, it induced slow brain waves. This peculiar effect of overbreathing occurred in only 21% of the normal children and 6% of the normal adults.

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MEDICINE

## Traces Invasion Route of Infantile Paralysis Virus

### Can Travel Only Along Axis Cylinders of Gray Nerve Fibers, Ending in Nose, Tongue, and Stomach Lining

**W**HEN infantile paralysis invades a human body, success or failure of the virus blitzkrieg hangs on all-important "ifs." A view of how the disease conquers, gained by anatomical study, was reported to the American Congress of Physical Therapy by Dr. John A. Toomey of Cleveland City Hospital.

To produce the disease, the virus must contact gray-fibered nerves which have naked axis cylinders, into which the virus can be absorbed and thus find transportation to its goal—the central nervous system. Gray fibers which the virus can reach for entry would include nerves in the nasal passages and about taste buds of the tongue, and networks of nerves in the stomach tract.

The disease will strike with more force, Dr. Toomey explained, if the absorption of the virus is rapid, if transmission through the body is quick and easy, if the strain of the virus is virulent, if the nerves are not in healthy condition, or if other factors favor the invading virus. If the distance between the virus' point of attack and the central nervous system is too great, the virus may fail, because it may be absorbed, excreted, or destroyed long before reaching the spinal cord, he stated.

Dr. Toomey was a pioneer advocate of the theory that infantile paralysis can enter the body by being swallowed with water. Received skeptically at first, this idea is now commanding respect.

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## Diathermy Wavelengths

**D**IATHERMY apparatus used by physicians in giving heat treatments by means of short-wave radio emanations will have their own frequency bands to prevent interference with other radio services, if plans outlined by E. K. Jett, chief engineer of the Federal Communi-

cations Commission, to the Congress are carried out.

Transmissions from electro-medical apparatus have actually been received across the continent and even across oceans, Mr. Jett reported in explaining the interference difficulties caused by diathermy machines. When diathermy interference began to be serious, a number of years ago, the disturbances were at first attributed to stations operated by persons under the jurisdiction of foreign governments. The signals were traced to diathermy machines operated in medical centers and offices of private physicians. One machine was hitched to a telegraph key and signals tapped out in International Morse Code were easily read in Washington, D. C., and Great Lakes, Ill. From 10% to 82% of the channels in use for long distance communication were interfered with at times.

Diathermy apparatus affects radio reception because the machines are essentially radio transmitters, Mr. Jett explained. The radiation that causes interference is not essential for therapeutic purposes and steps are being taken to prevent such radiation. Mr. Jett emphasized that the F.C.C. recognizes the importance of electro-medical apparatus to the medical profession and he assured those present that the government will cooperate fully so that both services may continue without mutual annoyance.

At Inter-American Radio Conferences it was agreed that the various American nations should consider limiting diathermy apparatus to two frequencies in harmonic relation above 12 megacycles which will not interfere with existing radio assignments.

Mr. Jett told the medical men interested in the problem that a conference to bring together all the interested parties will be called in the near future.

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## Study Weather Effects

**I**F YOUR temper and nerves get more edgy when a storm is approaching, it is probably because the water balance in tissues of your body actually is disturbed due to falling barometric pressure outside.

Advancing this likelihood, Dr. C. A. Mills of the University of Cincinnati College of Medicine advocated that scientists should closely investigate body changes thus involved when stormy weather brews.

Suicides are more apt to occur when a storm center approaches, Mr. Mills stated. Domestic troubles flare up most readily. It is harder to think clearly. Even animals become more inclined to fight, and less reliable.

"With declining outside pressure," he explained, "tissues take up water and swell, much as does a sponge, while with rising pressure they give up water and shrink."

In girth measurements of his own leg just below the knee, he observed changes of half an inch or more with major weather changes, and some people changed several pounds in weight.

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## Frostbite Warning

**W**ITH winter around the corner, frostbite hazards and treatment were called to the attention of the Congress by Dr. Frank V. Theis of Chicago.

"Individuals with wet clothing, shoes, or gloves are particularly susceptible to the effect of cold weather," he warned.

Temperatures do not have to dive below freezing to cause frostbite, Dr. Theis explained, citing a golf player and a tunnel worker who suffered gangrene of the toes from exposure to wind and wetness in above-freezing weather. This type of frostbite is termed trench foot.

Dr. Theis urged that unless the exposure to cold has been long and extreme physicians who diagnose frostbite should make sure that the patient is not actually a sufferer from some pre-existing circulatory disease. Hardening of the arteries, either the diabetic or the senile form, is frequently overlooked, he has found, and the patient receives unsatisfactory treatment for his case of "frostbite."

Application of heat to an acutely frost-bitten hand or foot is particularly injurious, Dr. Theis emphasized. Often, he said, it leads to rapid mummification of the tissues.

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