

their mothers, they have difficulty in expressing affection, have a feeling of unpardonable sin, and are careful with their language. They may also have an impulse to take things and think of suicide.

Boys should want to emulate their fathers, but not their mothers, this inquiry seems to indicate. Boys who want to be like father have few worries, few feelings of remorse and no thoughts of suicide.

If they want to be like mother, they

are likely to be remorseful, have dizzy spells and forgetfulness, and to think they have enemies.

Girls can want to emulate father, however. They have no headaches or dizzy spells, and they are conservative, they claim, with money. If they want to be like mother, they are affectionate and get along well with the boys, but they may be forgetful and believe they have enemies.

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PHYSICS—PSYCHOLOGY

Alcohol Quicker Pain Killer Than Any Drug, Even Morphine

Physics Experiments Giving Definite Quantitative Results Show That One Aspirin Is as Good as Six

ALCOHOL is a quicker pain-killer than any drug, even morphine, and six aspirin tablets are no better than one, it has been found in studies on the human body's tolerance to pain reported to the meeting of the American Physical Society.

Describing the first exact physical measurements on the threshold of pain in the human body, Drs. J. D. Hardy, H. G. Wolff and H. Goodell of the Russell Sage Institute of Pathology, Cornell University Medical College, New York, said that the pain produced over a large area of the body is no greater than is the pain produced over a small area.

Thus there is no summation of pain as there is with the sense of touch, sight or the body's detection of heat and cold.

"This finding," Dr. Hardy declared, "may represent a wise provision of nature which wants the body to be very sensitive to heat but which warns the body as much for the destructive stimulus on a small area as on a large one."

By injection of drugs it was found the total effect obtained by aspirin is secured after the first tablet is taken. Six tablets do no better.

Rating intolerable pain as 100 per cent., the scientists reported aspirin's relative effectiveness as 35 per cent. At the same time they found that injections of alcohol rated 40 per cent. And they found that the alcohol acted within 15 minutes instead of hours required by other drugs.

To fool the test subjects dummy injections were sometimes given. It was possible, with these, to demonstrate the

psychological effect of will-power on deadening pain.

One pain was found to deaden another. A tight clamping of the arm to produce pain dulled pain produced on the forehead by radiation. This is a scientific demonstration of the well-known habit of biting the lips when pain is experienced elsewhere.

Morphine, the master pain-killer, was found to act on the brain and to create pain tolerance all over the body in equal amounts. This finding means that morphine sufficient to dull pain from one tooth extraction would be equally good if two or three teeth were all pulled at once.

To produce pain without heating or by contact the Russell Sage scientists used radiation from a brilliant 1,000-watt electric light whose rays were focussed on the blackened foreheads of the subjects under test.

A shutter exposed the forehead for short intervals which were gradually lengthened until a sensation of pain was just detected at the end of the exposure. At this point a sensitive thermocouple was used to measure the amount of radiation present. By these measurements a threshold of pain could be calculated.

To show that they were measuring only pain and not severe heating, the scientists gave the subjects aspirin to raise the pain threshold (give greater tolerance to pain before the ability to detect it.) It was then found that the pain threshold went up but the heat threshold went down. This indicates that pain, alone, was being measured.



TWO LARGEST

Installed within the bob of the world's largest pendulum is the world's largest hourglass, in which the finely crushed shells of 2,000 eggs are used instead of the much heavier sand. The pendulum itself, a part of the Westinghouse exhibit at the New York World's Fair, requires 30 minutes to swing its full arc of 60 degrees. The bob weighs half a ton.

Varying areas of the forehead were exposed to the radiation and the pain threshold remained the same. This means that the pain sensation in the body is not an additive one.

Studies of the time it took various amounts of radiation to produce pain showed that not only was the amount of temperature rise important but also the rate of rise of temperature.

Thus the scientists were able to produce severe sensations of pain with only a two-degree rise in the skin temperature if they made this rise occur fast enough. In contrast a slow rise in skin temperature produced only minor sensations of pain until much higher skin temperatures were attained.

New Evidence of Neutrino

LIKE detectives hunting a ghost, scientists have been searching for the neutrino—a hypothetical, elusive atomic particle, long-sought but never found.

At the meeting of the American Physical Society, University of Michigan researchers reported that the search is "warm." Still missing—and perhaps ever to remain so—is the neutrino itself, but