

PHYSIOLOGY—CHEMISTRY

# Pharmacologist Drinks Heavy Water in Experiment

**T**AKING the risk of swallowing ten grams (about third of an ounce or teaspoonful) of "heavy water," Prof. Klaus Hansen, Oslo University pharmacologist, reported that he had apparently suffered no ill effects after five hours, sufficient to allow assimilation of the deuterium-containing water.

Nevertheless he was attended by four doctors ready with stomach pumps, heart and respiratory stimulants for emergency use if they seemed to be needed.

In his first human test of the possible poisonousness of heavy water, discovered in America in 1931, Prof. Hansen intends to keep taking doses of the heavy water each day for two weeks until the daily dose is increased to a hundred grams of water of which 99 per cent. of the hydrogen is the heavy or double weight variety called deuterium to distinguish it from ordinary mass one hydrogen. If this plan is carried out he will then be taking three and one-third ounces of heavy water, a sizable drink.

Since the lowest production cost of heavy water declared probable is about \$5 a gram, the drink already taken has a minimum value of about \$50. The largest dose scheduled is worth at this rate about \$500 and the whole experiment will use about \$4000 worth of heavy water alone. The present U. S. market price of heavy water is \$19 a gram.

## Slows Life

Because heavy hydrogen is double the weight of the ordinary kind, it was suspected that it might have unusual effects on life. First experiments performed on seeds, fish and mice showed that it slowed life processes.

A mouse fed heavy water with a medicine dropper in a University of California experiment acted very strangely, as if temporarily poisoned. Tadpoles placed in heavy water at Princeton died in an hour. Based on these preliminary experiments, it was suggested that heavy water may be a matter of life and death for all of us. San Francisco scientists advanced the idea that since heavy water has an inhibiting effect upon the normal functioning of protoplasm of which the hu-

man body is largely composed it may be that accumulation of heavy water in the tissues is the cause of old age and senility.

On the other hand Yale experiments showed that low concentrations of heavy water appear to have a stimulating effect on the growth of simple plants.

Heavy water in low concentrations was drunk for the sake of science some months ago at Freiburg, Germany, to discover how long water remains in the human body.

## Human Too Large

The Oslo professor should give the heavy water to a small animal instead of experimenting on himself, Prof. Harold C. Urey of Columbia University, discoverer of heavy water, suggested when asked by Science Service to comment on the experiment. Prof. Urey was awarded the 1934 Nobel Prize in chemistry for the discovery of heavy hydrogen.

"Ten grams (one-third ounce) or 100 grams (three and one-third ounces) of heavy water is a negligible amount," said Prof. Urey, when compared with the large quantity of water in the human body. If the heavy water available were given to a small animal, instead, it would be possible to make a large portion of the water in his body consist of the heavy water which some scientists believe may be poisonous.

But Prof. Urey is not among those who felt that it would be dangerous to drink heavy water. He said:

"I have never predicted bad effects due to drinking heavy water."

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PSYCHIATRY

## Leaders of a Community May be Psychopathic Types

**L**EADERS, followed and even revered in their time, are often "the most bizarre of the psychopathic types" of the period in which they live. Dr. Ruth Benedict in her illuminating ethnological study "Patterns of Culture" (Houghton, Mifflin Co.) does not exempt some of these personality patterns

which have played important parts in American development.

"The Puritan divines of New England in the eighteenth century," she writes, "were the last persons whom contemporary opinion in the colonies regarded as psychopathic. Few prestige groups in any culture have been allowed such complete intellectual and emotional dictatorship as they were. They were the voice of God. Yet to a modern observer it is they, not the confused and tormented women they put to death as witches, who were the psychoneurotics of Puritan New England. A sense of guilt as extreme as they portrayed and demanded both in their own conversion experiences and in those of their converts is found in a slightly saner civilization only in institutions for mental diseases. . . ."

"In our own generation extreme forms of ego-gratification are culturally supported in a similar fashion. Arrogant and unbridled egoists as family men, as officers of the law and in business, have been again and again portrayed by novelists and dramatists, and they are familiar in every community. Like the behaviour of Puritan divines, their courses of action are often more asocial than those of the inmates of penitentiaries.

## With Great Influence

"In terms of the suffering and frustration that they spread about them there is probably no comparison. There is very possibly at least as great a degree of mental warping. Yet they are entrusted with positions of great influence and importance and are as a rule fathers of families. Their impress both upon their own children and upon the structure of our society is indelible. They are not described in our manuals of psychiatry because they are supported by every tenet of our civilization. They are sure of themselves in real life in a way that is possible only to those who are oriented to the points of the compass laid down in their own culture.

"Nevertheless a future psychiatry may well ransack our novels and letters and public records for illumination upon a type of abnormality to which it would not otherwise give credence. In every society it is among this very group of the culturally encouraged and fortified that some of the most extreme types of human behaviour are fostered."

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Textiles that radiate heat have been devised.