

## PHYSIOLOGY

# Lack of Iron May Cause Common Mental Disease

## Dementia Praecox Patients Lacking Iron in Brain Cells Suffer Like Men Not Breathing Enough Oxygen

**A** LACK of sufficient iron in the brain cells of persons suffering from the mental disorder *dementia praecox* may make it impossible for them to utilize the oxygen they breathe, and the lack of oxygen may in turn account for their peculiar behavior.

This theory of the possible cause of a common mental disease was advanced by Dr. Walter Freeman of St. Elizabeth's Government hospital for the insane in Washington, in a report published in the *Archives of Neurology and Psychiatry*. Dr. Freeman was led to the discovery through following up the research of three other physicians who have been hunting a method of treatment for the disease.

Within the past year, Drs. A. S. Loevenhart, W. F. Lorenz, and R. M. Waters, of the University of Wisconsin, tried the experiment of administering a mixture of carbon dioxide and oxygen to *dementia praecox* patients who had sunk into a stuporous catatonic state. Startling changes in the condition of the patients resulted from the inhaling of these gases. From being stuporous and mute and mentally inactive, the patients then became active and communicative.

The mixtures given contained a much higher percentage of oxygen than ordinary air, and Dr. Freeman believed that the effect on the patients might be parallel to the mental effect on normal persons of increased atmospheric pressure. To assure himself of just what these effects were, he entered a tank used for tests at the Washington Navy Yard and in which the atmospheric pressure can be raised or lowered by air pumps to almost any desired degree.

### A Slowing Up

The effect of low oxygen concentrations he found to be a slowing up of mental activities, with a feeling of bewilderment, difficulty in thinking and seeing, and proneness to error which may eventuate in actual fainting. Increased oxygen tension, on the other hand, produces real stimulation, an effect which may be likened to that of

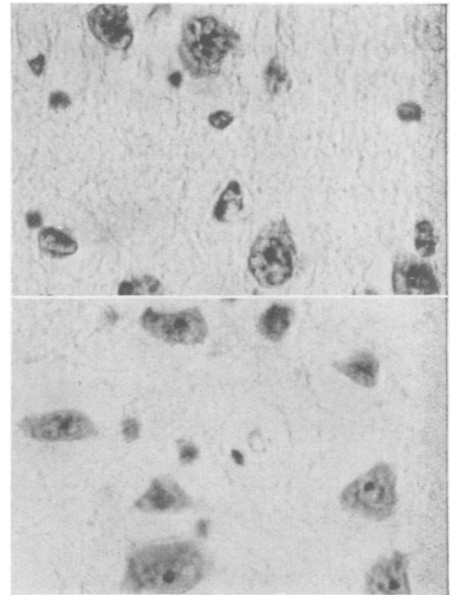
three cocktails without the attendant buzzing in the head.

It seemed to Dr. Freeman altogether reasonable to conclude that "The brain cells of schizophrenic patients may be unable to function normally because they cannot utilize the oxygen that is brought to them under existing conditions of atmospheric pressure, although they may perform their normal functions when the tension of oxygen is increased sufficiently to compensate for the defect."

But he also raised the question whether there might not be some defect in the brain of schizophrenic patients which would account for this inability to utilize oxygen. Microscopic and chemical examination revealed the fact that the brain cells of persons who had died with schizophrenia contained decidedly less iron than the brain cells of others.

Iron is a part of every living cell and is necessary to the process of oxygen metabolism. The reason that cyanide is such a deadly poison to cells is probably because it combines the iron in the cell to form an inert compound.

Dr. Freeman regards this discovery only in the light of a very promising



### IRON IN BRAIN CELLS

*Is made visible through the microscope by means of staining. The paleness of the cells in the bottom picture which are from a brain affected by dementia praecox, shows how they lack iron. The dark centers and distinct outlines of the cells at the top indicate the presence of considerably more of this mineral in the brain which does not have that particular mental disease.*

lead for further research, and warns against the raising of false hopes of a dementia praecox "cure." Cures of this disease, like cures for cancer, are something which the medical profession is hoping for and earnestly working for, but so far they have proved elusive. At present he has found no way in which the deficiency in iron could be made up, although he has tried several methods without apparent benefit.

*Science News Letter, January 31, 1931*

## CHRONOLOGY

## February A "Perfect" Month Of The Simplified Calendar

**T**HE year 1931 contains a perfect month. This month is February, say proponents of the simplified calendar. It begins on a Sunday, and it has exactly 28 days, which this organization believes is a sufficient number of days for any month.

While more and more business organizations in the United States are adopting the simplified calendar for their business accounting, it is expected that a committee of the League of Na-

tions will take some action on a new world calendar this year.

The late Representative Stephen Porter of Pennsylvania, who was chairman of the House Foreign Affairs Committee, had hearings on the simplified calendar conducted before his committee in great detail. He had introduced a resolution which would enable the United States to take part in an international conference looking to calendar revision. No action was ever taken by