

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

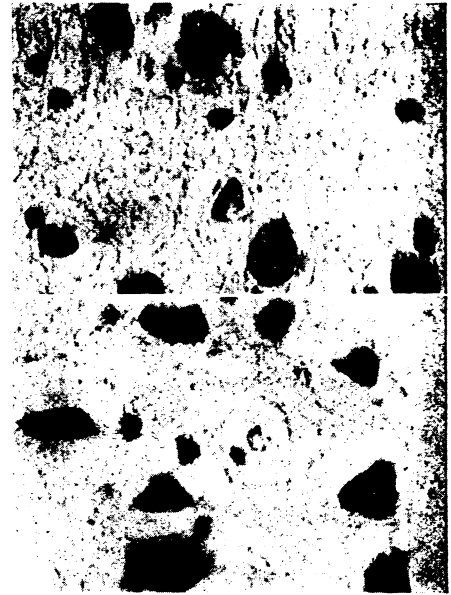
three cocktails without the attendant buzzing in the head.

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.

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CHRONOLOGY

February A "Perfect" Month Of The Simplified Calendar

THE 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

the House. In fact the House Foreign Affairs Committee never reported the resolution back to the House. Congress seemed disposed and still seems to be inclined towards waiting to see what other countries of the world want to do about it, before taking any decisive action.

The League of Nations conference on the reformed calendar occurs in October, 1931. The United States will be asked to send a delegate. A calendar reform treaty may be drawn up for submission

to the various governments, and if this is done, a date for enactment of the new calendar will be set in the protocol.

While it cannot be said that the United States has definitely committed itself as yet, certainly not legislatively at any rate, the National Committee on Calendar Reform in this country feels that sufficient evidence has been given that the United States welcomes the adoption of a new 13 month fixed calendar and is proceeding accordingly.

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GEOLOGY

Recent Rock Fall a Trifling Incident in Niagara's History

There Were Once Five Falls and in the Future the Sheer Drop Will Wear Away to a Series of Cataracts

NIAGARA created a nation-wide sensation by staging a bit of a rock-slide and aroused all over again the discussion of various projects for "saving" the falls from the fate their natural erosion may bring them. But it's all a very old story to Niagara.

Some time between twenty-five and fifty thousand years ago, when the Ice Age on this continent was just ending and the Great Lakes, as we know them today, were still young, there were five Niagaras instead of only one.

The remains of these great falls have been found by geologists at a point quite remote from their single surviving sister. They thundered for centuries, with no human ear to hear them, in the region where Syracuse now stands. They were left high and dry when the level of the upper great lakes fell, and all the outlet-water was concentrated in a single river, the modern Niagara.

When the modern falls first started running they were about seven miles down-river from their present position. They have been backing up ever since, so that the recent rock fall is only a trifling incident in the whole history of the carving of the Niagara gorge.

The existence of Niagara Falls depends on the presence of a sheet of hard limestone overlying a thick bed of less resistant sandstones and shale. The churning water at the bottom of the falls, filled with broken fragments of hard rock, carves away the softer material from under the over-hanging edge whence the waters leap. From time to time pieces of the limestone break

off. Usually they are small; the recent slide was an exception. Thus the falls keep young by constantly peeling off bits of their face.

The history of the falls has been the same throughout their millenia of life up to the present. There will come a time, however, when there will be no more Niagara as we know it today, but a tumultuous series of cataracts dashing through tumbled gigantic blocks of stone.

This is because the capstone which forms the river-bed at Niagara dips slightly toward the south. Several miles upstream it disappears under a stratum of softer rock, which is not capable of forming a resistant rimrock for the river to jump from. When the river reaches this place, it will scour down through the soft stuff until it finds the limestone, break this up in great pieces and thereafter flow foaming and spouting through the obstacles it will thus pile up for itself.

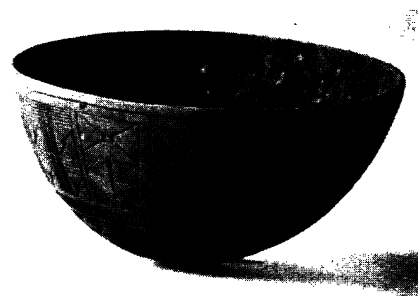
But the generation that will see this still waits for a wholly undeterminable future.

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ARCHAEOLOGY

Governor of Porto Rico Seeks Aid of Ancient Art

THE office of Gov. Theodore Roosevelt of Porto Rico has requested from the Smithsonian Institution in Washington information about old native art designs of the West Indies. It is Gov-



A MODEL FOR MODERNS

An ancient bowl carved with a unique design by prehistoric inhabitants of the West Indies. Governor Roosevelt would revive these forgotten designs for use in the beautiful embroideries and textiles made by modern craftworkers of Porto Rico.

ernor Roosevelt's hope that the art designs used by prehistoric inhabitants of the land may be revived and applied in the beautiful embroideries and textiles made by modern craftworkers.

H. W. Krieger, ethnologist of the Smithsonian Institution, said that the governor's request is being met by forwarding him a representative collection of designs from Indian tribes not only of the West Indies but also of Central and South America.

The ancient West Indian designs which would be best suited for application to textile arts are not on prehistoric objects, but may be found on the modern calabashes and gourds which the Indians use as dishes, Mr. Krieger said. On these the Indians still carve designs that were familiar to their forefathers many centuries ago.

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ENTOMOLOGY

Robber-Fly Masquerades In Bumble-Bee's Clothing

See Front Cover

THE villainous-looking hexapod that glares at you from the cover of this week's SCIENCE NEWS LETTER is as bad a citizen as he looks. He is a robber-fly, who should by rights be called an assassin-fly, for his practice is to pounce upon other insects in the air, pierce them with his sharp beak, and bear them away to his cannibal feasting-place.

The robber-fly is not only an assassin; he hides his deadly trade under a disguise borrowed from a formidably-armed but law-abiding member of a quite different insect family, the bumble-bee. Only a closer examination unmasks the cheat.

The photograph is by Cornelia Clarke.

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