

MEDICINE

Hormone for Mental Ills

Lack of the natural body chemical, serotonin, in the brain may cause mental disorders, such as schizophrenia, the National Academy of Sciences is told.

► A NEW hormone treatment for serious mental diseases such as schizophrenia was proposed at the National Academy of Sciences meeting in Washington by Drs. D. W. Woolley and E. Shaw of the Rockefeller Institute for Medical Research, New York.

The hormone would be serotonin or a close chemical relative of it. Lack of serotonin in the brain may be the cause of mental disorders, much as lack of another hormone, insulin, results in diabetes.

The idea that serotonin may play a role in certain mental processes came to the Rockefeller scientists through study of a variety of antiserotonins. The antiserotonins included drugs that cause mental aberrations, for example, an ergot alkaloid, another plant drug called harmaline, yohimbine, and a synthetic chemical, medmain.

Serotonin is a natural body chemical found in blood serum. The Rockefeller scientists also found it in the brain. This suggested that the mental changes caused by the antiserotonin drugs resulted from a deficiency of serotonin in the brain. The deficiency would result from the drug countering or blocking the effect of serotonin itself.

The naturally occurring mental disorders, such as schizophrenia, are mimicked by the

antiserotonin drugs. They may therefore also result from a serotonin deficiency in the brain. So the remedy for such mental disorders might be treatment with serotonin.

The Rockefeller scientists urged psychiatrists to apply these findings to see whether this hormone attack might conquer mental disease.

Serotonin itself may not be the actual remedy that would be tried, because it may not be able to get from the blood stream into the brain tissue. In mice, the Rockefeller scientists found, it could not penetrate this blood-brain barrier. A serotonin-like compound may have to be found or synthesized.

Where serotonin is made in the body and its exact role in body functioning are not known. It can contract muscles of the kind called smooth, which are not under voluntary control. It constricts small blood vessels and therefore has an effect on blood pressure. It is said to be twice as powerful as adrenalin for fighting shock. It was isolated from blood platelets in 1948, though only a pinch of it could be got from a very large quantity of blood.

Serotonin has since been made synthetically and is known chemically as 5-hydroxytryptamine.

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ASTRONOMY

Ring-Shaped Nebula

See Front Cover

► AN INTERESTING planetary nebula, NGC 7293, in the constellation of Aquarius, the water carrier, has been photographed on a red-sensitive plate with the 200-inch Hale telescope of the Palomar Observatory.

Shown on the cover of this week's SCIENCE NEWS LETTER is a roughly ring-shaped cloud of gas and dust, which is not self-lighted, but is illuminated by the faint star at the center of the dark inside circle. Although the star is faint, its temperature is unusually high and it pours out considerable ultraviolet light.

This "black light" excites the atoms in the cloud. In returning to their normal energy level, they in turn emit light in the visible region, especially in the red. This makes it possible to infer the temperature of the star, which is estimated at more than 270,000 degrees Fahrenheit.

Close examination of the photograph reveals a peculiar spoke-like structure along the ring's inside rim, coarser and less clearly

evident in the cloud itself. Although this nebula had been known for about 150 years, its peculiar structure was not discovered until 1938, when Dr. Walter Baade of Palomar observed it with the 100-inch telescope on Mount Wilson.

These "spokes" consist of gas, but what causes the appearance of "nuclei" at their tips is not known. Another question still open is whether the "nuclei" and "spokes" are falling in on the central star, or were ejected by that star and are shooting away from it, or are not moving laterally at all.

Dr. Baade plans to take more plates with the 100-inch telescope in the next year or so to determine whether these nuclei have moved in the more than 15 years since he made the 1938 plates. Although lateral motion at the source might be great, displacement of the images on the plate would be small because the nebula is about 600 light years from the earth. A light year is about 6,000,000,000,000 miles.

Several hundred planetary nebulae are now known. They bear this name because

in Herschel's telescope when he discovered the first of them in the late 1700's, they looked like disks, an appearance similar to that of planets.

This previously unpublished photograph can now be purchased from the Observatory, jointly operated with the Mount Wilson Observatory by the Carnegie Institution of Washington and the California Institute of Technology, Pasadena.

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TECHNOLOGY

Railroad Research Saves \$100,000,000 Yearly

► SCIENTIFIC RESEARCH, covering everything from curved automobile windshields to the atmosphere in the cabs of diesel locomotives, is knocking \$100,000,000 a year off the cost of running America's railroads.

The railroad research stems from a center situated at the Illinois Institute of Technology in Chicago, but some of the actual research work is farmed out to other universities and colleges, the sponsoring Association of American Railroads in Washington reports.

Aimed at improving service as well as cutting costs, the research program has tackled such problems as why curved automobile windshields were cracking during shipment. The estimated loss was \$288,302, but laboratory studies soon whittled this down \$172,980—a 60% saving.

Among other things, researchers now have their eyes focused upon the cabs of diesel locomotives. They want to see if oil fumes are affecting the crews in any way. This has been a contention of some engine service employees.

Other research, including studies of metals, hot boxes, bearings, lubricants, wheels, track, bolt tension and waterproof paint, has turned up enough knowledge to save the railroads about \$100,000,000 a year. The total savings for the life of the 55 projects is estimated at \$1,000,000,000.

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MEDICINE

University to Train Doctors for Industry

► THE FIRST department of industrial medicine in an American university has been established at Wayne University, Detroit.

The large number of industries in the area apparently influenced the decision to establish the new department.

Research, especially on measures for prevention of occupational diseases, instruction of graduate doctors as well as medical students, and general service to the entire community are aims of the new department.

Dr. Arthur J. Vorwald, former director of the Edward L. Trudeau Foundation in Saranac Lake, N. Y., will head the new department.

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