

MEDICINE

Attack Schizophrenia

Find chemical, cholinesterase, that reduces some of the bizarre behavior of those afflicted with the serious mental disease, schizophrenia.

► A NEW chemical attack on the serious mental disease, schizophrenia, is now under way.

A chemical has been found which reduces some of the bizarre behavior of this sickness. The chemical has been given to patients by injection into the ventricles, or cavities, of the brain.

News of this new approach to the conquest of schizophrenia, which fills one-fourth the hospital beds in this country, is reaching the scientific world through two English scientific journals. The first report, in *NATURE* (Jan. 26), is by Dr. Stephen L. Sherwood, neurosurgeon at Middlesex Hospital in London, England, and Miss Ellen Ridley and Dr. Warren S. McCulloch of the department of psychiatry, University of Illinois College of Medicine at Chicago.

Cholinesterase is the chemical used by this group both in treatment of patients and in research on cats. The treatment of patients is still strictly on the research level, Dr. McCulloch stresses. It will be probably three years before the scientists will know its real value.

The treatment produces remissions, during which symptoms are lessened. Then the patient relapses. The injections of the chemical into the brain can be repeated, perhaps indefinitely, with improvement each time. But how long the improvement will last after further injections is not known yet.

Further limiting the treatment to the research level at present is the fact that cholinesterase, a body chemical, is not available commercially. For the Illinois research it was extracted from human red blood cells by Dr. James Bain of the University of Illinois.

The schizophrenia patients likely to be helped by this treatment, if further research proves its value, are those with catatonia. Stubbornness, negativeness, and a stupor or trance-like state are characteristic of this form of schizophrenia. Patients lie motionless, doing nothing for themselves. They will hold for long periods any posture their bodies are put into, such as head turned, one arm extended and body bent at the hips.

Cats get a condition that cannot be told from human catatonia as a result of a special kind of brain injury. When these catatonic cats are given cholinesterase injections into their brain ventricles, the symptoms disappear for an hour and a half to two hours. The improvement is sustained and advanced by repeated injections.

Most interesting to scientists and perhaps most hopeful for eventual conquest of the catatonic form of schizophrenia and maybe other forms is the chemistry underlying the cholinesterase treatment.

This body chemical normally destroys acetylcholine. This is another body chemical which is set free when nerve endings in voluntary muscles are stimulated to contract the muscles. The cholinesterase controls the acetylcholine, preventing too much of it from accumulating at nerve endings. A number of drugs counteract cholinesterase. Among them is di-isofluorophosphonate. In large doses this and similar chemicals produce symptoms resembling some mental diseases and they aggravate the signs and symptoms of schizophrenia.

These findings, made by other scientists, gave Dr. Sherwood the idea that cholinesterase and similar drugs counteracting acetylcholine might reduce the symptoms of schizophrenia. There are other, muscle relaxing drugs which counteract acetylcho-

line. Among these are some derivatives of the old Indian arrow poison, curare, and such synthetics as Flaxedil, Mytolon and Syncurine. Several investigators are now trying Flaxedil in patients with catatonia, but results are not yet ready for reporting.

These chemicals, although they counteract acetylcholine, do not achieve this in the same way as cholinesterase. The latter destroys acetylcholine. The others prevent a muscle from becoming permanently depolarized, thus relaxing it.

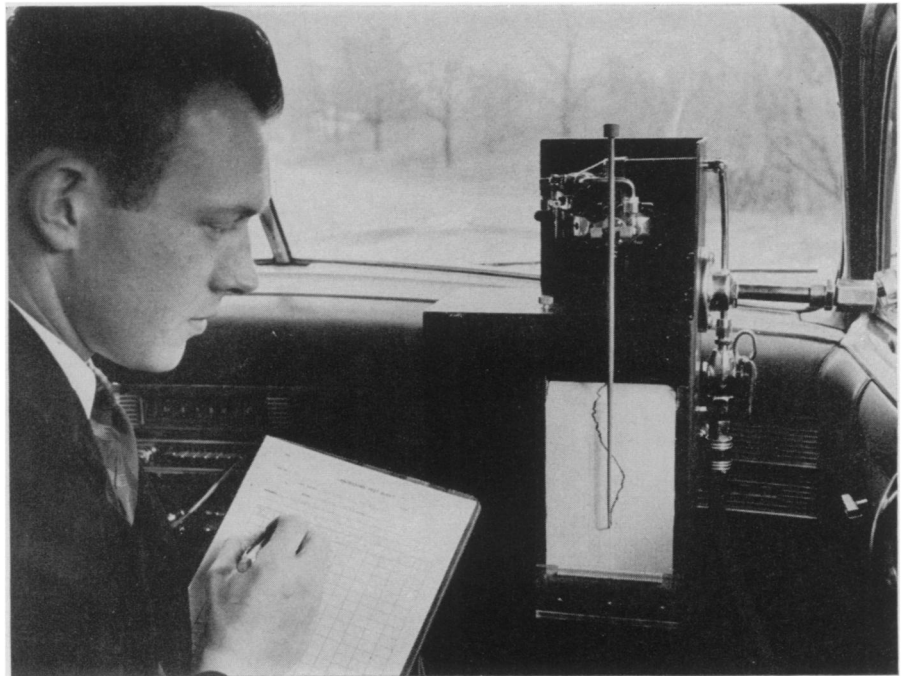
So far, no one knows whether the trouble in catatonia is accumulation of too much acetylcholine or over-sensitivity of some persons to normal amounts of acetylcholine. If the scientists can find out why cholinesterase and perhaps some synthetic drugs help even temporarily in catatonia, they may know what goes wrong in the body to produce the disease. Then there will be much greater hope of remedying or preventing the sickness.

Science News Letter, February 16, 1952

ENGINEERING

Robot Motorist Helps To Find Better Rides

► A ROBOT motorist with mechanical nerves is the newest scientific tool for designing more comfort and safety into automobiles.



ROBOT MOTORIST—To help make automobile riding smoother, this device automatically records on a moving tape the slightest rolling, pitching or zigzag motions in cars under test. Chrysler Corporation engineers combined a small gyroscope, a spark coil and a metal pointer to make the robot motorist.

Chrysler Corporation research engineers have developed this new gyroscopic ride recorder to measure the slightest rolling, pitching or zigzag motions in cars under test.

The recorder is so sensitive and quick thinking that it evaluates certain important ride qualities instantly and without the need for mathematical calculations or allowance for centrifugal force on curves. It has been used to help determine the merits of various combinations of suspension systems and components, such as stabilizer bars, in contributing to passengers' riding comfort.

The ride recorder feels and thinks with the aid of a small gyroscope, a gas-driven turbine, a spark coil and a metal pointer that writes the answers on a roll of waxed paper.

One terminal of an electrical spark gap is formed by the tip of the pointer. A plate behind the moving waxed paper tape supplies the ground. Current from the car's electrical system operates the spark coil and drives the tape.

While the case that houses the waxed paper tape and the frame of the gyroscope moves with the car body, the gyroscope holds the pointer steady, with the tip almost touching the tape. As the paper moves past the pointer, intermittent sparks from the pointer trace on it an accurate pattern of roll, pitch or zigzag motion. This information can be interpreted accurately in half degrees from the tape record.

Science News Letter, February 16, 1952

INVENTION

Hand Mold Insures Hand-Tailored Hamburgers

➤ A HAND mold for hamburgers which insures that they will all be of the same size and fit the bun exactly has been invented by Augustus H. Belt, Bloomington, Ill. He received patent number 2,584,536 for his invention.

Science News Letter, February 16, 1952

NUTRITION

Budget Protein Foods

➤ MOST HOUSEWIVES try to have one meat dish for the family each day, not only because it taste good but because they know it is highly nourishing.

There are, however, many other foods that furnish the same kind of nourishment in the form of high quality protein. And often they are less expensive than meat. Some comparative values of these foods are given by Miss Elizabeth E. Ellis, home economist of the University of New Hampshire.

"If you have a dollar to spend on foods providing protein," she says, "it is interesting to find that at today's prices you could buy the most for one dollar from foods in the following order: Skim milk, cottage cheese, American cheese, pork liver, codfish or haddock, whole milk, tuna fish, pork shoulder, eggs, hamburger, fowl or chicken, beefsteak (round), veal chops, pork chops and lamb chops.

"Vegetable proteins from dried beans and cereals do not have as good body building qualities, but they are valuable, especially when combined with proteins from animal sources. There is very little research to show us just how to mix animal and plant proteins for best results. A good rule is for adults to get one-half their protein from animal sources, and children should get even more than this."

To help in planning for the daily supply of protein, Miss Ellis points out that one egg, one glass of milk, 3 ounces of fish and one ounce of cheese equals 5¼ ounces of round steak in protein content; that ½ ounce of cheese, a glass of milk and 3 ounces of chicken will provide an equal amount of protein; or 3 cups of milk and 3 ounces of pork shoulder. If the older children have 4 cups of milk, 3 ounces of pork shoulder and one egg; or 3 ounces of fish, one egg, one glass of milk and

one ounce of cheese, they will get as much protein of good quality as in 8¼ ounces of round steak.

The remainder of the protein for the day could come from such sources as cereals, dried beans, and peanut butter.

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