PSYCHOLOGY

Study Drug Uses

➤ SOLITARY confinement, one of the Communist techniques of "brainwashing," makes white mice and rats go "stir crazy."

These animals then make wonderful laboratory animals for testing drugs used to treat human psychotic and neurotic patients, Drs. R. C. Barnes and J. C. Munch of Hahnemann Medical College told the American Association for the Advancement of Science meeting in Washington. (See p. 5.)

The "brainwashed" mice become neurotic and show a very human-like sign of nervousness, a violent shake of the head when the back of the neck is touched unexpectedly. Some mice respond with a convulsive movement.

"Stir crazy" rats do not show such a head twitch but they make a senseless attack on anything placed in the cage such as a glass rod or pencil.

The tranquilizing drugs, such as reserpine, Thorazine and Miltown, were found to calm down the animals just as they do humans and the doctors were able to determine the dosage required to have a tranquilizing, anticonvulsant and sedating effect on the rats and mice.

Retarded Children

➤ A COMBINATION of tranquilizer and brain stimulant is giving hope for the improvement of severely retarded children.

The drug, serpatilin, was tried in a pilot study at Norwood School, Chevy Chase, Md., Miss Gertrude Jutison of the University of Maryland, reported to the AAAS.

The drug, which is about one-tenth tranquilizer and nine-tenths brain stimulant, seemed to work two ways. It made the dull, slow children more alert and calmed the hyperactive ones. In some children, it helped to improve speech; for others it bettered eye-hand coordination. For many, improved behavior resulted.

The research is under the direction of Dr. Ira Pearlman, Chevy Chase physician.

In another paper at the same meeting, scientists heard that no special techniques are needed for teaching reading to those who are handicapped because of brain injury. They are not different in perception and reading ability from other mentally handicapped individuals, Dr. Donald Y Miller, coordinator of service for exceptional children in Arlington, Va., said.

It has been thought that brain-injured individuals have difficulty in learning to read because they are unable to see letters in the same way as the non-brain-injured and that therefore different techniques were needed for teaching them.

Dr. Miller reported research in New York State on two groups of 29 individuals each, one of which were brain-injured and the other handicapped because of heredity or familial reasons. Both groups were of young people from state institutions. No significant differences were found between the two groups.

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GEOPHYSICS

Earth's Magnetic Field

➤ A LARGE nuclear explosion could result in some permanent change in the earth's external magnetic field.

The energy released in the explosion of a 100 megaton nuclear bomb, about ten trillion trillion ergs, is approximately the same as the total energy contained in the earth's magnetic field from the surface outward into space. Therefore, Drs. E. P. Ney and P. J. Kellogg of the University of Minnesota suggest, a bomb exploded at heights above 100 miles in the atmosphere might have a distorting effect on the magnetic field.

Explosions at lower altitudes, Dr. Ney said, would probably have little effect on the field. The energy contained in the external magnetic field is only a small fraction of that contained within the earth itself.

The only "experiment" supporting this suggestion so far, Dr. Ney said, was the observation at Apia in the Pacific on Aug. 1, of a man-made aurora resulting from the Johnson Island explosion. Any large changes in the field caused by nuclear explosions could be measured from the ground.

Other geophysical effects of high-altitude nuclear bursts could include the temporary trapping of particles found in the Van Allen radiation belt. When released, these could produce an aurora.

The suggestion of Drs. Kellogg and Ney is reported in *Science* (Dec. 26). With Dr. J. R. Winckler, also of the University of Minnesota, they are preparing a further report on the geophysical effects of large nuclear explosions.

The report is one of the many results of the International Geophysical Year, which ended Dec. 31, made in the same issue of *Science*. Also reported is the discovery of the presence of lithium in the earth's high atmosphere. The element, reportedly used in hydrogen bombs, was not previously known to be present there.

Its presence at high altitudes could be related to nuclear tests carried out during the same period as the IGY program, which began July 1, 1957.

Among the other preliminary findings reported by Dr. Hugh Odishaw, executive director of the U. S. IGY program, are:

Measurements of the magnetic fields associated with sunspots revealed them to be as much as 8,000 times greater than at the earth's equator.

The intensity cycle for cosmic rays runs opposite to and somewhat behind the sunspot cycle.

The ozone layer and layers of the ionosphere that are created by solar radiation appear to persist during the long night despite the sun's absence.

Cosmic ray intensity at high altitudes has been found to be about the same in Arctic and Antarctic latitudes and more than four times intense there than at the equator.

An antipodal "echo" of the satellite signals, coming from the side of the earth opposite to the satellite, was discovered and is believed due to unexpected ducting of the signals by the ionosphere.

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