

## PSYCHIATRY

# Measure Insanity Level

➤ HOW CRAZY can you get? A serious answer to this popular question may come from research reported by Dr. Ogden R. Lindsley of Harvard Medical School, Boston, at the mid-Atlantic regional research conference of the American Psychiatric Association at Georgetown University School of Medicine, Washington, D. C.

Dr. Lindsley and associates are seeking an objective measure of the fine differences in behavior between mental patients. They hope to be able to give numerical values to different kinds of behavior.

At present all patients with certain general kinds of abnormal behavior get the diagnostic classification of schizophrenia. Psychiatrists know there are differences in schizophrenia patients. They have not, however, good measures or ways of detecting these fine differences, the way differences between normal and cancer cells can be told with a microscope.

Dr. Lindsley cites the man who kept pulling the lever as an example of the kind of behavior differences among mental patients. The lever was on the slot-machine equipment devised by Dr. B. F. Skinner of Harvard to study behavior, used first for studies of animals, then rigged for studies of mental patients.

When the patient pulls a lever he gets a candy bar, a cigarette, a jellybean or some other "reward." When the machine's circuit is broken, he no longer gets a reward for pulling the lever. All normal people and

all animals tested stop pulling the lever after a few tries when no reward is delivered.

The patient cited, however, kept pulling the lever an hour a day every day for 150 days even when no reward came from the machine. He was the only one out of 70 patients tested who did this.

The rigged slot machine method for studying behavior differences is called the "operant conditioning method." It differs from the reflex conditioning methods of the Russian scientist, Pavlov. In operant conditioning, the patient does not have to pull the lever, or make a response. In reflex conditioning, the animal or person is forced by an electric shock to move, or respond.

How differences in motivation affect behavior can be learned through this method, even when the patients are so sick mentally they will not tell anyone how they feel or what motives make them act in a certain way.

A few patients, for example, will pull the lever to make the machine give milk to a hungry kitten, although they would not pull it to get candy or some reward for themselves.

Some patients have apparently been helped by the testing, although it was not intended as a treatment method. After many hours of operant conditioning, they responded, or pulled the lever, many more times each hour than they had at first.

Science News Letter, March 24, 1956

## ENGINEERING

# Will Build Israeli TVA

➤ BY 1965, Israel will have the most complicated, and possibly the most extensive, irrigation system in the world.

Plans for the Israeli equivalent of our TVA were outlined to SCIENCE SERVICE by Paul H. Doron, an Israeli engineer who is in charge of the ten-year project.

When completed, the irrigation and hydroelectric scheme will make Israel an agriculturally self-sufficient nation. It will increase the number of irrigated acres from 250,000 to 750,000 acres. This will represent three-fourths of the total irrigable land in the small Middle Eastern state. It will mean a food supply for a population of 3,000,000. Israel's current population is more than 1,717,000 persons.

The head of the system is the Jordan River that runs down the eastern border of Israel and ends in the Dead Sea. The system's body is made up of secondary irrigation systems, district water supplies and just about every well in the nation. Backbone for the project is a series of open canals linked to an 85-mile long pipeline.

Building the irrigation project can be

likened to tackling the job of constructing a superhighway directly across the United States and then linking every primary and secondary road in the country to it.

The water diverted from the Jordan will be sent either into the Biblical Sea of Galilee, which will also act as a storage reservoir, or down the center of the ancient land in a modern aqueduct. The main pipeline will be 108 inches in diameter and will be made of pre-stressed concrete.

There will be interchanges along the main pipeline that will link it to four secondary irrigation systems, to be built, as well as every other water system in the country, including individual village wells.

Villages that have underground water reservoirs will use water from the main system and stockpile the natural water by leaving it untapped. In dry years, a water-rich community can then send its well water through part of the irrigation system to a water-poor settlement. The next year, if needed, the situation can be reversed.

Every available drop of water will be utilized in the complex and intricate sys-

tem. Salt water in one section of Israel, for example, will be sent along with sweet water to a mixing plant and then the mixed water redistributed.

In another instance, salt water found in springs along the Sea of Galilee will be diverted to settlements for use in their fish breeding ponds. This reduces the salinity of the Sea and helps the fish breeders.

A second pipeline of similar capacity to that planned will eventually be built to run alongside the first. This conduit will act as a main regulator for the entire set-up.

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