

PSYCHIATRY

Double Slot Machine Helps Mental Patients

► A KIND of psychological double slot machine can be used to measure the improvement of mentally ill patients and also to stimulate this improvement, Drs. H. N. Peters and O. D. Murphree of the Veterans Administration Hospital, North Little Rock, Ark., indicate in *Science* (Feb. 5).

When a patient sits in front of one of these machines, he is faced by a bank of ten levers. If he pulls the correct one, he receives a bar of candy from the machine. A simple trick of wiring will rig two of the machines so that the correct lever must be pulled on both machines simultaneously in order to get the candy from the machine.

Since a characteristic of schizophrenia is an inability to work or cooperate with other persons, the doctors developed this double slot machine to study and treat their patients.

Even extremely regressed schizophrenics, they found, can learn to cooperate on the double slot machine. Sometimes they do this by watching the partner to follow his lead on which lever to pull. Sometimes they tell him which one is correct. Sometimes they will hold back pulling a lever until they see the partner pull the same one. And sometimes they explain to the partner the principle of the solution.

Science News Letter, February 20, 1954

AGRICULTURE

Modern Methods Could Double Coffee Production

► COFFEE PRODUCTION could be practically doubled in many Latin American areas with modern, scientific agricultural methods, experts in the United States are agreed.

No one will predict, however, that greater production would mean a return to cheap coffee.

Alphonso Varela, technical adviser to the Coffee Commission in Washington, reports that most Latin countries have launched agricultural research on improving coffee trees and production.

As for hopes that increased production would mean cheap coffee, Mr. Varela indicated this is most unlikely. The industrial development of the coffee countries has meant the end of the cheap labor which was the basis of cheap coffee.

In Costa Rica, the Organization of American States maintains the Inter-American Institute of Agricultural Science where coffee research is carried on. The United States participates in this program.

Most of this research, however, is in its first stages. Dr. C. A. Krug, coffee geneticist in Brazil, has developed a new tree with high yields, Mr. Varela said, but the beans of the new tree are deformed. Dr. Krug is now trying to develop good beans on his highly productive tree.

Elsewhere in Latin America, work on fertilization, terracing, drainage, insect and disease control is just beginning to show results.

Through the U. S. Department of Agriculture, a project on coffee cultivation was started at the University of Puerto Rico. Since 1950, methods have been found to double the yield of coffee trees on that island.

The shortage of trained specialists, engineers and research scientists in the agricultural fields seriously hobbles Latin American countries in their efforts to build up agriculture. Mr. Varela and officials in the Agriculture Department report keen interest in Latin America in the development of scientific agriculture.

Nathan Koenig of the Department characterized agriculture in that area as similar to this nation's before the development of new methods, crops and machinery.

Science News Letter, February 20, 1954

ENDOCRINOLOGY

Frozen Male Sex Glands Grafted Successfully

► SUCCESS IN grafting frozen male sex glands in rats is announced by Drs. A. S. Parkes and A. U. Smith of the National Institute for Medical Research, London, in the *British Medical Journal* (Feb. 6).

A hint, but no more than that, that the special freezing technique may make possible transplants of human gland tissue in a state capable of continuing to live appears in the report.

Success with the rat gland grafts resulted from the method in which the glands were frozen in material containing glycerol. The scientists had previously discovered that this protects the spermatozoa from the otherwise fatal effects of freezing and thawing.

The same method was used successfully for grafts of rat ovarian tissue.

In the experiments with the male sex glands, seven out of nine animals had grafts showing androgenic (masculine) activity when the glands had been stored in a frozen state for as long as 22 weeks before being grafted.

Science News Letter, February 20, 1954

METEOROLOGY

3-D Being Used By Weathermen

► EVEN THE weathermen are now using 3-D. Albert Carlin of the U. S. Weather Bureau in Washington is drawing three-dimensional charts to give other weathermen a better picture of how the air masses that bring our weather move across the country.

The charts, still in the experimental stage, will eventually be used not only in teaching meteorology, Mr. Carlin foresees, but also in other classes such as geology and mapping, where showing contours in three dimensions would be helpful.

Science News Letter, February 20, 1954

IN SCIENCE

MEDICINE

Polio Vaccine Trials Evaluation Planned

► THE VALUE of the polio vaccine to be given a mass trial starting late in March or early April will be determined in an independent study directed by Dr. Thomas Francis Jr., chairman of the department of epidemiology in the University of Michigan School of Public Health.

The evaluation study will be financed by a grant from the National Foundation for Infantile Paralysis, New York, which is sponsoring the trials of the vaccine, but Dr. Francis made it clear that the evaluation study will be conducted on a completely independent basis.

An evaluation center will be established at the University of Michigan and the university's survey research center will assist in collecting data and preparing statistical analyses.

Although the trial vaccine will be triple-checked for safety before use, Dr. Francis pointed out that the vaccine's effect in controlling polio is not yet proved.

"It is not known at present," he said, "whether the vaccine to be used will be highly effective, moderately effective or ineffective in protection of human subjects against paralytic poliomyelitis.

"In an independent study of the results of the test, we will attempt to insure an adequate measurement of the vaccine's influence through the collection and analysis of good and unbiased data," Dr. Francis stated.

Science News Letter, February 20, 1954

METEOROLOGY

Electronic "Brain" Predicts Storm's Path

► A GIANT electronic "brain" could have accurately predicted the pre-winter snowstorms that battered the Atlantic coast on Nov. 6-8, 1953.

Because of its success in doing so after the fact but using only information available before its development, more warning of the approach and path of such massive storm centers will be possible in the future. (See SNL, Nov. 14, 1953, p. 309.)

Most human forecasters predicted that the intense storm, which dumped up to a foot of snow on parts of Pennsylvania and New York, would move out to sea, but it struck northward instead. The electronic computer, however, using mathematical methods, "predicted the motion more correctly and also the intensification of the storm," a special study by the U. S. Weather Bureau revealed.

Science News Letter, February 20, 1954

CE FIELDS

BIOPHYSICS

Graying Mice Hair Measures Radiation

► GRAYING OF hair gives a radiation dosimeter of a biological kind instead of the physical or mechanical meters ordinarily used for such a measurement.

This was discovered by Drs. Jack Moshman and Arthur C. Upton of the mathematics panel and biology division, Oak Ridge National Laboratory, Oak Ridge, Tenn., in studies started by findings on mice exposed to radiation at the Eniwetok weapons tests in 1951.

These mice at Eniwetok had been exposed to graded doses of whole body radiation, they report in *Science* (Feb. 5). As early as three months afterwards, many of the more heavily irradiated mice had gray hair showing in their normally all brown coats.

Since the mice had the same ancestry, were of about the same age and had been irradiated simultaneously, the degree of graying, or hair color loss, seemed to be correlated with the dose of radiation.

Later studies at the laboratory with random samples from a colony of over 3,000 mice have borne this out.

Science News Letter, February 20, 1954

PHYSICS

TV Camera Tube Sees Both X-rays and Light

► A TELEVISION camera tube has been developed in Eindhoven, The Netherlands, which is sensitive to X-rays as well as light.

This does not mean Bob Hope will appear on your screen in the near future as a skeleton with strange blotches that represent his tie clip, cufflinks, tooth fillings and belt buckle. It does mean, however, that industries soon may make enlargements of X-ray pictures using a television set up instead of film.

The Philips Research Laboratories report that the wiry innards of two tiny transistors showed up as shadows on the screen when X-rays were used.

When combined with the usual optical lens system of a television camera, the tube produced a conventional picture of the little electrical devices. The shadow pictures were obtained after the lens was removed. The X-rays were adjusted to go through the transistors and then pass through the tube screen. Wires inside the pea-sized transistors produced shadows on the screen by stopping the X-rays.

L. Heijne, P. Schagen and H. Bruining, all of the Philips Research Laboratories, reported in *Nature* (Jan. 30), that the "two-eyed" tube uses a photoconductive material

of lead oxide evaporated on a glass window. This layer, only 1/5,000 of an inch thick, is scanned by a low-velocity electron beam.

When X-rays are used as "light," the tube is filtered by a sheet of aluminum 1/50 of an inch thick.

A working model of the camera tube already has been devised. It has a scanning area about the size of a dime. The X-ray picture that falls on this small area therefore is "magnified" when reproduced on a television screen of more normal size.

The scientists believe the experimental model eventually may lead to industrial applications because of its speed of response. They also suggest it holds promise as a tool of commercial television broadcasting.

Science News Letter, February 20, 1954

PSYCHOLOGY

Babies Cry Because They Are So Taught

► BABIES ARE taught to cry, contrary to the centuries old belief that they cry naturally, states Dr. Saul Rosenzweig of the Community Child Guidance Clinic and Washington University, St. Louis, Mo.

He bases this theory on "intimate observation" of his own children, and more casual observation of many others.

Crying, he explains, is a "natural, primitive reaction in situations of distress," an "unconditioned response," as some psychologists would say. But the baby goes on using this way of communication because his other signals are not heeded.

For example, Dr. Rosenzweig says, a baby may smack his lips or stick out his tongue when he wants food. If these signals are not understood, the hungry baby finds himself in a situation of distress and cries. Then the parent or nurse comes. So the baby learns to cry instead of smacking his lips when hungry.

Other signals Dr. Rosenzweig has observed: If baby is cold, he may squirm or tremble. If he is wet, he may sneeze. One baby, aged five months, showed her tongue briefly in a licking motion when she wanted milk. When she wanted soft solids, such as baby cereal, she smacked her lips audibly.

Of course, even a baby who has been understood will sometimes cry, for example, if in pain or after being hurt. However, when the baby has successfully used other signals than crying, the crying in distress is far more meaningful.

If the baby is not taught to cry, he will, Dr. Rosenzweig believes, learn more easily and quickly to respond to the maturing and socializing process that is part of growing up. There will, he says, be "established between the parent and the baby a warm and sympathetic relationship that plays an important part in the entire development of the child." Not to mention that the nursery will be quieter.

Dr. Rosenzweig's theory is given in detail in *Mental Hygiene* (Jan.), official publication of the National Association for Mental Health.

Science News Letter, February 20, 1954

PHYSICS

Atomic Locomotive Design Worked Out

► AN ATOM-POWERED locomotive, having the power of four diesel units and competing successfully with diesels on an economic basis, has been worked out in design by a University of Utah nuclear physicist, Dr. Lyle B. Borst.

Dr. Borst said his design calls for a small atomic reactor only two feet wide, three feet high and three feet long. It would be used to make steam for a turbine-driven electric generator.

The locomotive would come in two sections: the first housing the atom power plant, the second housing the heat dissipating radiators. The small boiler would be heavily shielded to protect the engine's crew from deadly atomic radiation.

Reporting to five railroads and nine manufacturers cooperating in his study, Dr. Borst said the locomotive would require about a pound of fresh uranium every few months. It was estimated that the proposed engine could compete successfully with diesel power under "favorable circumstances."

Dr. Borst was assisted in his study by Dr. B. J. Stover, assistant research professor of chemistry; Dr. M. A. Van Dilla, assistant research professor of physics, and graduate students George K. Abel, Duncan M. Bowie, and Kent W. Petty.

Science News Letter, February 20, 1954

ZOOLOGY

Bush Dog Puppies Thrive on Formula

See Front Cover

► TWO YIPPING bush dog puppies are thriving on a bottle formula in the San Diego Zoo hospital, far from their native South American jungle home.

The two pups are probably the first of their kind to be bred and born in captivity, Ken Stott Jr., general curator of the zoo, said.

The bush dog, *Speothos venaticus*, is a rarely trapped inhabitant of the tangled jungles of northern South America. Long and low, it has the sausage proportions of a dachshund, although with a slightly heavier build.

Last summer Charles Cordier captured an adult pair in Dutch Guiana and sent the dogs to the San Diego Zoo. In January, high-pitched yelping indicated the birth of the pups. For two weeks, however, the mother kept them out of sight. On the 15th day, the mother changed her mind. She ejected the puppies from the den and ignored them.

There were four babies, two alive and two dead. The surviving pups, both males, were taken to the zoo hospital where they are growing on their bottle formula at the age of one month.

Science News Letter, February 20, 1954