

## MEDICINE

**Paralyzed Moroccans Still Getting Treatment**

► SOME 80% of the 10,000 Moroccans paralyzed last November by eating adulterated cooking oil are still stricken. Only about 20% are cured, but 30% are making marked progress.

To aid treatment of the 8,500 in the rehabilitation centers established by the League of Red Cross Societies in Morocco, five doctors from the University of Pennsylvania in Philadelphia have volunteered to spend a month each as medical adviser there.

The 10,000 Moroccans were stricken after eating food prepared with cooking oil mixed with an oil used to flush the engines of jet planes. Most of the victims are under 18 years of age.

Twenty-seven Moroccan merchants were found guilty of preparing the poisonous concoction to increase profits. Five were given death sentences and the others were imprisoned for life.

The five Philadelphia doctors will not be paid for their services, but the American Red Cross will provide travel expenses, and the Medical International Cooperation Organization (MEDICO), a nonprofit organization, will pay living expenses.

At present a medical staff of 50 from Red Cross societies in 13 nations is caring for the paralyzed victims. The American Red Cross has provided two nurses and six physical therapists since the outbreak to help with the treatment.

• Science News Letter, 78:104 August 13, 1960

## CHEMISTRY

**Soil Treatment May Reduce Strontium-90**

► THE RATE of uptake by soils of radioactive strontium-90 varies according to their composition and may be reduced by chemical treatment, new studies have shown.

Strontium-90 is a long-lived element of fallout from nuclear testing and in large doses is known to be a cause of leukemia and bone cancer in man. It acts like calcium; and well-developed calcium formations in both plants and animals tend to form a natural barrier to strontium-90.

This was found to be true of high calcium soils as well, according to experiments by R. L. Uhler and F. P. Hungate of the Hanford Laboratories of General Electric Company, Richland, Wash., reported in *Nature*, 187:252, 1960.

Strontium-90 studies were made on crops grown on uncultivated but watered acidic, calcareous and alkaline soils.

The uptake from the calcareous soil was one-half to one-third the uptake from acidic soil. The investigators attributed this to the larger quantities of available calcium naturally present in calcareous soil.

The GE scientists found that it was possible to reduce uptake of radioactive strontium-90 by as much as 80% by adding calcium-high lime or gypsum to acidic soils.

Basic calcareous and alkaline soils treated with massive doses of phosphate showed a 50% reduction in uptake of strontium-90.

Except for the phosphate treatment, however, none of the other procedures appreciably lowered strontium-90 uptake from calcareous soil.

The lack of cultivation while thoroughly wetting the soil and allowing it to dry established to some extent the potential reduction of radioactive contamination through precipitation reactions. Further studies are needed to determine whether an appreciable part of this potential can be realized.

The availability of strontium-90 from soil to plants to man is an important factor in evaluating the health hazard presented by this radioactive element.

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## PSYCHOLOGY

**Mental Discipline Seen Cure for Man's Troubles**

► IN HIS EXHAUSTIVE struggle to adapt to today's society of rigid orderliness and conformity, man persists in using the escape hatches of barbiturates and tranquilizers rather than trying "the permanent cure—mental discipline through education," said Dr. G. Arnold Cronk, associate professor of health and preventive medicine at Syracuse University, at a symposium on Creative Arts Education.

"This dysadaptation of man to his environment has resulted in psychic, psychosomatic and somatic disorders resulting in ulcers, hypertension and possibly arteriosclerosis," Dr. Cronk said at the Syracuse, N. Y., meeting.

Setting materialism, status and technology as supreme goals was lamented by Dr. Cronk.

He said, "It is unfortunate that today's men and women are born at a time when education is devoted to what sells best as determined by Madison Avenue techniques.

"The time has come when it is imperative that we carefully examine the genetic and biological abilities of man in relationship to the demands of cultural and educational systems. Our failure to assume this responsibility would, I am afraid, put the seal of doom on the continued evolution of man and his culture," Dr. Cronk continued.

In regard to creativity, Dr. Cronk said that if it "is defined to mean adventure into the unknown, there has developed a tremendous stagnation of creativity. We are rapidly running out of the ideas upon which tomorrow's culture will depend."

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## ENTOMOLOGY

**Insecticidal Spray Controls Moths in Pianos**

► AN EFFECTIVE INSECTICIDAL spray solution for the control and prevention of carpet beetles and clothes moths that feed on the wool felt parts in pianos has been developed by the U. S. Department of Agriculture in cooperation with the Piano Technicians Guild. The new solution is inexpensive to produce commercially and easy for technicians to apply. It is colorless, evaporates rapidly and leaves no odor.

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## PHYSICS

**Alternating Gradient Synchrotron Operating**

► THE ALTERNATING GRADIENT synchrotron at Brookhaven National Laboratory, Upton, N. Y., one of the world's two largest operating particle accelerators, has produced for the first time a beam of protons at an energy of more than 30 billion electron volts, or Bev.

This is the highest energy ever attained by a particle accelerator. Before reaching this energy, the AGS had run for about an hour at 24 Bev.

In 1952 the principle of strong focusing of the particle beams was discovered by Brookhaven scientists. If this discovery had not been made, the magnet for an accelerator capable of reaching the desired energy would have been prohibitively large and expensive.

The completion of the AGS at its designed energy will enable scientists in the United States to study nuclear interactions at energies about five times greater than previously possible.

Another accelerator, quite similar in design and size to the AGS, has been completed at the European Organization for Nuclear Research (CERN) Laboratory, near Geneva, Switzerland. The CERN proton synchrotron, has been run at 28 Bev. (See *SNL*, 77:394.)

With a machine in the 30-Bev range, physicists at Brookhaven expect to learn more about the many kinds of particles, such as mesons and hyperons, and the various "anti-particles," that are produced in target nuclei by bombarding them with high-energy protons.

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## DENTISTRY

**X-Rays O.K. for Teeth, Says Dental Association**

► THE AMOUNT of radiation needed to make a complete survey of the mouth by X-ray is below the detectable damage level.

The Journal of the American Dental Association, 61:275, 1960, says, "The routine use of modern X-ray equipment and techniques for dental diagnostic purposes is not harmful."

The Council on Dental Research of the ADA says the fraction of diagnostic radiation that reaches the reproductive organs of the body during the course of a dental examination is less than the amount received by each person from natural sources in an entire year, and can have no significant influence on the genetic patterns of succeeding generations.

Patients should have X-ray examinations when the dentist indicates they are necessary, the Council says.

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# CE FIELDS

## AERONAUTICS

### Atomic-Powered Aircraft Designs Revealed

See Front Cover

► **NUCLEAR-POWERED PLANES** that could fly non-refueled to the limit of the crew's endurance have been designed. Some of the details were revealed by the U. S. Air Force and Convair Division of General Dynamics Corporation.

Drawings showed two swept-wing planes, each having an assembly of jet-like engines mounted in the tail of the fuselage. This style is one of several possible configurations under study.

The canard-type planes lack conventional tails. At each wing tip is a vertical stabilizer-rudder assembly. The horizontal stabilizer-elevator surfaces are placed far forward on the fuselage, like stubby wings.

One design, shown on the cover of this week's *SCIENCE NEWS LETTER*, is for the direct-air-cycle nuclear engines, a type under development by the General Electric Co. The drawing for this aircraft shows a pair of conventional jet engines mounted under the wings, in addition to the nuclear powerplant.

The other design employs indirect-cycle engines, a type under development by Pratt & Whitney Aircraft. Which kind of nuclear powerplant will be used in the first plane has not yet been determined.

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## ANIMAL HUSBANDRY

### Humane Slaughter Law Effective August 30

► **A FEDERAL HUMANE SLAUGHTER** law becomes effective Aug. 30. It requires packers selling meat to the Government to use an approved humane method of immobilizing the animals before they are killed.

There are three approved methods of immobilization. In one, animals are knocked out by carbon dioxide.

In the other two methods, electrical shock or mechanical concussion is used to stun the animals. They are held in a restraining pen while an electric probe or mechanical instrument is applied to their heads.

Cardox Division of Chemetron Corporation, a supplier of carbon dioxide, claims the carbon dioxide system keeps hogs unconscious for about four minutes, twice the time needed for slaughtering. The heavier-than-air gas gathers at the bottom of a tunnel which is depressed in the center. Animals walk into the tunnel and emerge, unconscious, on a conveyor belt.

Cardox reports that in one test, a hog that had passed through the system, but purposely had not been killed, did not resist repeating the trip soon after regaining consciousness.

The new law requires that animals be rendered unconscious painlessly before being killed. It also regulates animal handling, the construction of restraining pens and the training of personnel.

Requirements of the law, and the techniques which have been developed for immobilization, can be used to improve the initial stages of animal dressing and, in some cases, to increase productivity, according to packers who have installed humane slaughter machinery.

"But infinitely more important is the fact that these animals will be spared many of the horrors of the packinghouse," said Mrs. Christine Stevens, president of the Animal Welfare Institute.

Five states, California, New Hampshire, Washington, Wisconsin and Minnesota, will have humane slaughter laws that become effective Aug. 30, the same date as the Federal law. Massachusetts recently passed a law that will become effective Jan. 1, 1962. Generally they supplement the Federal law and provide specific penalties for failure to comply.

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## BIOCHEMISTRY

### Some Fish Poisons More Toxic Than Nerve Gases

► **POISONS** isolated from clams and from the puffer fish have been found to be several times more toxic than the most powerful nerve gases known.

Small amounts of these animal poisons can temporarily block nervous transmission and conduction, but how they do it is still a puzzle.

A research team at Columbia University found that the equivalent of one drop in a rain barrel (a concentration of .0001 microgram per milliliter) of either poison would block electrical activity in the frog sciatic nerve fiber within 30 seconds.

Different concentrations of each poison were required to effect blockage under certain conditions in experiments with electric eels. But each poison was capable of shutting off both direct and indirect stimulation.

The presence of curare, a drug that paralyzes muscles by jamming the transfer of an impulse from nerve to muscle, had no effect on the amount of clam or puffer-fish poison required to block response to direct stimulation.

Several possible explanations have been proposed for the action of these poisons, but all to date have either been ruled out by preliminary tests or have not been tested sufficiently.

"At present, no satisfactory explanation can be given of the underlying chemical reaction," the researchers report in *Science*, 132:300, 1960, but the poisons promise to provide biologists with "a new potent tool for the analysis of events associated with nerve activity."

The research is reported by Drs. W. D. Dettbarn, H. Higman, P. Rosenberg and D. Nachmansohn, all from the departments of neurology and biochemistry, College of Physicians and Surgeons, Columbia University, New York.

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## GEOPHYSICS

### Mantle of Earth Like Steel or Plastic

► **GEOPHYSICAL STUDIES** indicate that the mantle of the earth is as rigid as steel during short periods of time, but is more like a plastic material over a multi-million year span.

Earthquake waves, which may last a few minutes, have shown that the earth, like a steel ball, can be deformed by strong forces, but springs back to its original shape after the forces are removed.

On the other hand, geological processes indicate that over millions of years the earth can be permanently deformed, like plastic, as when mountains rise where seas once existed.

In a long-range study of earth tides at the University of California's Institute of Geophysics in Los Angeles, the gap between the minutes of seismic wave measurements and the eons of geological time has been slightly narrowed.

The earth tides, similar to ocean tides, cause two daily bulgings of the earth's crust. As the earth rotates, the bulges rise and fall under our feet, following the gravitational pull of the moon and the sun.

For more than a year, a team of UCLA geophysicists under Dr. John C. Harrison measured the rise and fall of the earth tides at 13 stations all over the globe. The measurements proved that the earth behaves like a solid, not just for a few minutes but for at least 24-hour periods or longer.

There is still a tremendous time span between a day and the million-year flow on continents, but in the future UCLA geophysicists hope to narrow the gap further by measuring fortnightly, monthly and ultimately annual earth tides.

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## DENTISTRY

### Toothpaste Gets ADA's First Approval

► **THE AMERICAN DENTAL** Association has for the first time approved a fluoride dentifrice. The ADA, at the same time, has recommended fluoridation of the community water supplies as the most desirable method of preventing tooth decay.

Dr. Lester W. Burket of Philadelphia, chairman of the ADA Council on Dental Therapeutics, who reports the approval of Crest in the *Journal of the American Dental Association*, 61:272, 1960, says, "The stannous fluoride dentifrice is an aid in combating dental decay; it is not a cure-all. Nor will it substitute for fluoridation of community water supplies. Fluoridation, which is supported by exhaustive long-term studies, remains by far the most effective means for obtaining the benefits of fluorides."

The manufacturer's willingness to limit advertising claims to those supported by adequate research was one of the determining factors in the ADA decision to approve the dentifrice.

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