

## PHYSICS

# Cook With High Pressure

Scientists have found food can be cooked at room temperatures under very high pressures. Rubber and plastics broke down into elements and simple compounds.

► UNITED STATES scientists have found that eggs and steak will cook in 10 minutes at room temperature under very high pressures found 100 miles beneath the surface of the earth.

At the National Academy of Sciences meeting in Washington, D. C., Dr. Willard F. Libby, director of the University of California Institute of Geophysics and Planetary Physics and the 1960 Nobel Laureate in chemistry, reported that two giant hydraulic presses, built to exert pressures up to 60,000 and 100,000 atmospheres, have been used to cook foods at room temperatures.

By using pressures under 10,000 atmospheres, potatoes and carrots were cooked in an hour, while steak and egg yolk took only 10 minutes. The foods were cold, as well as completely sterilized, but otherwise as tasty as food normally prepared, Dr. Libby said.

The presses were designed to produce

pressures up to 100,000 atmospheres, or more than a million pounds per square inch, roughly equal to the pressure found 1,000 miles below the earth's surface, the scientist explained.

Common polymeric materials, such as rubber and plastics, exploded under 20,000 atmospheres pressure, and broke down into their elements and simpler compounds.

It is expected that a new form of high-speed chemical reaction will occur above 100,000 atmospheres, where most elements and compounds probably change into metals. Dr. Libby suggested that during such a reaction a compound may totally change into another compound in one-hundredth to one-thousandth of a second, after passing through an intermediate metallic stage.

The research reported by Dr. Libby is an extension of experiments done by Prof. P. W. Bridgman of Harvard.

• Science News Letter, 81:275 May 5, 1962

some young children could be due to similar irregularity.

In experiments with laboratory mice, he found that when the serotonin content of the brain was increased, their ability to learn to make the correct turns in a maze was temporarily reduced. When the serotonin was decreased, the learning ability of the mice was greatly increased.

It is not yet known, Dr. Woolley pointed out, whether the learning ability of humans can be similarly changed.

• Science News Letter, 81:275 May 5, 1962



DR. FREDERICK SEITZ—New president of the National Academy of Sciences.

## New President Elected

► THE NATIONAL Academy of Sciences elected a new president at the annual meeting in Washington, D. C. Dr. Frederick Seitz, head of the department of physics, University of Illinois, Urbana, will succeed Dr. Detlev W. Bronk on July 1.

Dr. Bronk, who is president of Rockefeller Institute in New York, announced he would not be available for a fourth term.

Dr. Seitz, a 50-year-old native of California, said one of the most important projects in support of research in this country is getting young people interested in science. The goal of science achievement set by science fairs accomplishes much toward this end, he said.

Motivation cannot begin too early, he indicated. Good teachers are needed, however—the kind that will notice the interest of students in science and encourage it.

“Good science students should be encouraged to continue their work as far as they can go,” he said. “No one should be deprived of a chance to study and do research in science.”

New members of the Academy's Council are Dr. Roger Revelle of the University of California, San Diego, and Dr. W. Barry Wood Jr. of Johns Hopkins University.

The National Academy of Sciences, although a private organization, was founded

## MEDICINE

# Cancer Cause in Tobacco

► “YOU MIGHT as well ask a person if he believes the earth is round as to ask him if he is one of those who believes cigarettes cause cancer,” Dr. Charles B. Huggins, director of the Ben May Laboratory for Cancer Research, University of Chicago, told SCIENCE SERVICE.

Dr. Huggins, who spoke at the 99th annual meeting of the National Academy of Sciences in Washington, D. C., said that certain compounds of tobacco tar fitted into the geometric pattern of cancer-causing hydrocarbons.

Sixty known cancer-causing compounds have been tested at the Ben May Laboratory, where Dr. Nien-Chu Yang, associate professor of chemistry at the University of Chicago, working with Dr. Huggins, has built a transparent plastic box in which cancer-causing aromatic hydrocarbons show a similar geometric structure to growth-promoting steroid and base pairs of nucleic acid.

Two components of deoxyribonucleic acid—guanine and cytosine—were made into a molecular model and a plastic frame was constructed to surround it. In this frame, Dr. Huggins showed, in slides, how all known cancer-causing aromatic hydrocarbons fit neatly. Also similar atomic models of the steroids testosterone (male hormone) or progesterone or estradiol (female hormones) fit.

But steroids are not cancer-causing in relation to mammary glands of rats.

It would appear that they are excluded, Dr. Huggins explained, because steroids are not flat and because of their thickness.

Solid geometry rather than plane geometry is involved, he pointed out, adding that to “induce cancer, hydrocarbons must resemble base pairs of nucleic acid in solid geometry and must be electron donors, that is, function in charge transfer of an electron or a part of an electron to a recipient as yet unidentified but most probably nucleic acids.”

Dr. Huggins gave credit to the Hungarian-born Nobelist, Dr. Albert Szent-Gyorgyi, for the references he made to the electronic factor in induction of cancer by hydrocarbons. The steric factor, or relation to steroids, is the new contribution made at the Ben May Laboratory.

These discoveries may be applicable in the future to cancer-causing additives in foods, Dr. Huggins said.

• Science News Letter, 81:275 May 5, 1962

## Change Learning Ability

► LEARNING ABILITY can be lowered or increased to an unusual degree by regulating the amount of the hormone serotonin in the brain—of mice, that is, Dr. D. W. Woolley, biochemist of Rockefeller Institute, New York, reported to the National Academy of Sciences meeting in Washington, D. C.

It has been known for several years, Dr. Woolley said, that signs of mental disease can be produced temporarily in normal people by changing the amount of serotonin in the brain. That led Dr. Woolley to wonder whether some of the idiocies afflicting