

MEDICINE

Proper Diet Decreases Repeat Heart Attacks

► ONLY FOUR EGGS a week, including those used in puddings and other types of cooking, are allowed heart patients who are dieting to lower their blood levels of cholesterol.

Heart attack patients on a low-fat, cholesterol-lowering diet have fewer repeat attacks and a much lower death rate than those who do not diet, physicians reported to a special two-day scientific meeting of the American Heart Association's Council on Arteriosclerosis in Bal Harbour, Fla.

Egg yolks, along with butter and other animal fats, tend to raise the cholesterol level. Although it has not been proved that cholesterol reduction prevents heart attacks, many scientists believe that there is sufficient evidence to warrant cholesterol-lowering diets.

A standard diet reported by three investigators from the Cleveland Clinic included two servings of lean meat, fish or poultry daily. Cottonseed oil and unsaturated margarine took the place of butter and other animal fats. This diet brought about a drop of 40 milligrams in cholesterol levels of 100 cubic centimeters of blood.

The researchers reported that a practical cholesterol-lowering diet could be palatable, even gourmet, with the use of properly chosen and readily obtainable foods. Drs. Helen B. Brown, Marilyn Farrand and Irvine H. Page carried out the study, which included 50 healthy persons with normal cholesterol levels.

Another study, conducted by Drs. Marvin Bierenbaum, Donald P. Green, Alvin Florin, Alan I. Fleischman and Anne B. Caldwell of the Atherosclerosis Research Center in Montclair, N.J., covered five years and involved 200 men between the ages of 20 and 50.

Those who had been placed in an unrestricted diet group had a heart attack recurrence rate one and one-half times higher than the group on the fat-controlled diet. Their overall death rate during the time covered by the study was two and one-half times higher.

• Science News Letter, 88:328 November 20, 1965

EDUCATION

Federal Research Aid Harms Higher Education

► THE \$16 BILLION ANNUAL federal research and development program, while it has achieved many breakthroughs in such fields as atomic energy, space and health, has actually harmed higher education in the United States, the House Research and Technical Programs Subcommittee reported.

Federal research and development programs, in addition to producing needed research, have improved higher education in the sciences in some particulars, illustrated by better graduate education and better science textbooks.

However, the subcommittee found that the federal research and development pro-

gram has harmed, or has failed to contribute to, university education generally in at least three ways:

1. The overall \$16 billion annual federal research and development program has harmed university education in the sciences by excessively diverting scientific manpower from teaching, and by overemphasizing research to the detriment of teaching.

2. The two-billion-dollar-a-year Federal research and development programs directed at scientific research in the universities and colleges have harmed higher education by concentrating such programs at a few large universities in a few geographic areas.

3. Those federal research and development programs directed at scientific research in universities and colleges have necessarily neglected the social sciences and humanities.

• Science News Letter, 88:328 November 20, 1965

SPACE

Earthlings on Moon Must Support Selves

► THE MEN in future lunar bases must become self-sufficient if man is ever to realize the full research value of the moon.

The seemingly airless, waterless moon is actually capable of providing both oxygen and water, while the lunar vacuum provides excellent insulation for storage of low-temperature materials such as liquid oxygen in the opinion of Dr. Peter E. Glaser of Arthur D. Little, Inc., Cambridge, Mass.

Several processes have already been developed for producing water, and thereby hydrogen and oxygen, from silicate rocks such as those that are probably found on the moon.

One of them, developed by the Aerojet-General Corp., Azusa, Calif., continuously recycles itself; that is, it produces as by-products the materials necessary to keep itself going.

Once man has established bases on the moon, he must begin to decrease his reliance on earth for life-support materials, Dr. Glaser told a New York Academy of Sciences conference on Planetology and Space Mission Planning.

A limitless power source already exists—the sun. But food, water, and atmosphere must be found, or created, “on location,” if the great cost and risk are not to become prohibitive.

Learning about the moon itself is not the only reason for man to go there, pointed out Dr. Paul D. Lowman Jr. of the National Aeronautics and Space Administration. The moon may provide clues to the origin of earth's own continents, as well as of the earth-moon system.

In addition, the moon's lack of atmosphere makes it an ideal location for optical and radio observatories, which on earth are greatly limited by the dense, flickering blanket of air.

Cosmic and solar radiation studies that are impossible on earth would be almost easy on the moon.

Earth's atmosphere permits only a tiny fraction of the electromagnetic spectrum to reach the ground.

• Science News Letter, 88:328 November 20, 1965

IN SCIENCE

PHYSICS

Molecular Adherence To Solids Explained

► A NEW THEORY of how molecules stick to the surfaces of solids has been developed by scientists at the National Aeronautics and Space Administration.

The new point of view is actually a resurrection of an old theory that molecules are held to electrically charged surfaces by unbalanced electrical fields.

Many substances such as silica gel, charcoal and clay have ionic surfaces with enormous holding power for absorbing gas molecules. Some are used in gas masks and in air purification systems.

Petroleum refiners should realize an immediate benefit from application of the new theory, as should medical researchers in the field of anesthetics.

The research team developing the new theory was headed by Dr. James King Jr. of NASA's Jet Propulsion Laboratory, Pasadena, Calif.

• Science News Letter, 88:328 November 20, 1965

TECHNOLOGY

Electronic System Will Send Radioactivity Data

► QUICK INFORMATION about radioactivity in milk, air, water, soil and any other material that could pose a health problem is to be transmitted to an electronic computer in Albany, N.Y., by a system expected to be in operation by the end of this year.

By getting data quickly, corrective and preventive action can be taken. Leased telephone wires will send information to the New York State Health Department laboratories in Albany.

The new system, which was designed by the New York State Health Department's radiological sciences laboratory, will supplement the department's statewide network of stations that sample materials for radioactivity.

It was designed under a contract with the U.S. Public Health Service, which is considering a nationwide network. About \$100,000 of Federal Government money has been involved so far.

The first station is at Springville, N.Y., in the western part of the state. Ready for use are four gamma-ray detectors, two alpha detectors and four beta detectors that can examine samples around the clock seven days a week. Other stations can be added and any station can be used as the central one.

The system operates when radiation causes the detector to send impulses to an analog-to-digital converter in the Springville Laboratory. This ADC changes the impulse into a signal a computer can read.

• Science News Letter, 88:328 November 20, 1965

E FIELDS

PUBLIC HEALTH

Keep Refrigerator Shut When Power Goes Off

► THE MASSIVE POWER FAILURE in New York and other northeastern states is a reminder that frozen foods are perishable.

The average apartment dweller keeps only a week's supply in the small refrigerator furnished, but if for any reason the electricity should go off, especially for any length of time, food poisoning could result if unfrozen foods are refrozen. During any power shortage the refrigerator door should be kept closed.

If ice crystals can still be seen on the frozen products, they can probably be refrozen safely, but if they are completely defrosted, they should be cooked and eaten as soon as possible.

Once a chicken or vegetable is cooked, it can be refrozen, on the assumption that bacteria have been killed by the heat.

The U.S. Department of Agriculture publishes a series of Home and Garden Bulletins that can be ordered by writing to the Department in Washington, D.C. Especially valuable are Bulletins No. 70, No. 48 and No. 10, when questions about food freezing and emergencies arise.

• Science News Letter, 88:329 November 20, 1965

PUBLIC HEALTH

Tobacco Material Itself Causes Tumors in Mice

► UNBURNED cigarette tobacco contains material that causes tumors in experimental mice, three Buffalo, N.Y., researchers reported in *Nature*, Nov. 6, 1965.

Dr. Fred G. Bock of the Roswell Park Memorial Institute, Buffalo, and two colleagues, reported that although flue-cured tobacco was less active than prepared cigarette tobacco as a source of promoting tumor-causing agents, the unburned tobacco itself definitely caused some tumors.

For most of the experiments, the paper was removed from commercial cigarettes and the tobacco was extracted with barium hydroxide, then filtered.

A special breed of Swiss female mice called ICR, aged 55 to 60 days, underwent experimentation, being first painted with DMBA, which is an abbreviation for 7,12-dimethylbenz-a-anthracene, which was dissolved in acetone. After three weeks the mice were painted with test solutions, and the number and distribution of tumors was noted.

The researchers conducted another experiment to find out whether the active material in the aqueous barium hydroxide extract would dissolve in acetone so that it could be more easily fractionated. Acetone was considered as a possible solvent because

acetone-benzene extracts of cigarette tobacco have been found to be active tumor promoters.

After various experiments, the researchers suggest tentative conclusions that indicate: the tumor promoter of the alkaline aqueous extract and the acetone-benzene extract of cigarette tobacco are closely related if not identical; the active material is either very highly bound to the ion exchange resins or it is insoluble at extreme acidity so that it was not separated out by the concentrated reagents used.

The active material may be produced through the "degradation" of preceding materials in the extracts or in the tobacco leaf itself.

The behavior of the active material is similar to the behavior of pigments that have been reported in several different types of tobacco.

The researchers are currently testing tobacco pigments to determine whether these compounds or their hydrolytic products may account for the tumor-promoting activity shown by extracts of cigarette tobaccos.

Drs. Raymond J. Shamberger and Huston K. Myers, also of Roswell Park, collaborated in the research.

• Science News Letter, 88:329 November 20, 1965

SURGERY

Artificial Heart Valves Give Life to Patients

► RHEUMATIC HEART PATIENTS are getting a new lease on life through replacement of three heart valves.

Dr. Albert Starr, head of surgery at the University of Oregon, Portland, told the American College of Surgeons in Atlantic City of the progress he had made in replacing the tricuspid valve. This valve often has to be replaced after substitutive mitral and aortic valves have been implanted in heart surgery.

Of 23 patients who had surgical replacements of all three valves, only two died, Dr. Starr reported.

"A 67-year-old woman who was such a desperate case that we advised against surgery," Dr. Starr said, "insisted that she needed to live to take care of her 80-year-old sister. We operated and she is still going strong."

Dr. Starr estimated that 10,000 persons are wearing either one or two or all three valves today. The Lowell Edwards Laboratory of Santa Ana, Calif., has produced 24,000 of the valves.

He estimated that 800 to 1,000 valves a month are implanted in humans at a cost of \$225 for each valve alone.

"We do not claim that the valves are perfect," Dr. Starr, who performed the first mitral valve replacement in the world, said. "Sometimes a temporary speech block occurs even if the operation is successful, but we are continually trying to perfect the parts."

Dr. Starr's first tricuspid valve operation was in February 1963, and this patient is still alive.

• Science News Letter, 88:329 November 20, 1965

BIOCHEMISTRY

'Miraculous Fruit' Makes Sour Foods Taste Sweet

► A LITTLE RED BERRY that transforms sour taste into sweet is under chemical analysis at the Florida State University in Tallahassee.

The berry, dubbed "miraculous fruit," is unique as a sour-sweet converter, so far as he knows, said Dr. Lloyd M. Beidler, professor of biological science at the university. Dr. Beidler's taste study received a grant from the National Science Foundation.

The professor said he does not yet know what chemical in the berry does the converting. However, its effect on taste buds will last about an hour after the fruit has been eaten.

So effective is the berry's performance that it will change a lemon or sour grapefruit flavor into sweet orange. Dr. Beidler stated that the effect is not like simply adding sugar to a lemon. A change in taste perception has actually occurred.

"Miraculous fruit" is native to Nigeria and Ghana. For years around the turn of the century, Africans used the olive-sized berry to sweeten their sour palm wine and bread. Since the active ingredient, whatever it is, lasts only two days, berry plants had to be imported and grown at the University, Dr. Beidler said.

The physiologist ventured a few theories concerning why taste changes. The berry's chemical may possibly act like a narcotic, he proposed.

A second explanation is that the berry affects the same taste sites as do acids and causes a change in the tongue cells that perceive flavor.

• Science News Letter, 88:329 November 20, 1965

DENTISTRY

Electric Toothbrush Keeps Gums in Condition

► AN ELECTRIC TOOTHBRUSH keeps the gums in better condition than does the ordinary kind, the American Dental Association convention in Las Vegas, Nev., was told.

A study of 60 persons to determine the effects of the electric toothbrush as compared to the old-fashioned kind was reported by Dr. John H. Manhold Jr. of the New Jersey College of Medicine and Dentistry, Jersey City.

Another boost for the electrically powered toothbrush was given by Dr. Claud M. Fraleigh, chairman of the department of periodontics, School of Dentistry, West Virginia University, Morgantown.

About 90% of people who brush their teeth by hand do not really brush properly. Moreover, in one study the persons brushing by hand had to spend eight minutes to get their teeth as clean as an electric toothbrush did in only three minutes.

Dr. Fraleigh emphasized the necessity of good mouth care at home to prevent recurrence of serious gum trouble that has been treated by a dentist.

• Science News Letter, 88:329 November 20, 1965