

Academy Warns Against Major Changes in Diet

➤ ALTHOUGH MUCH evidence links high fat intake with heart disease, it is not conclusive enough to call for radical changes in the U.S. diet, the National Academy of Sciences reported.

A cause-and-effect relationship between high cholesterol levels and heart trouble, for instance, is still lacking. Moreover, recent research indicates that a high carbohydrate diet promotes concentrations of fat components called triglycerides in the blood and that this may also be related to coronary heart disease.

One way to lower the triglyceride level is to follow a diet low in calories and carbohydrates and relatively rich in fats, particularly polyunsaturated fats, said the Academy. So, the kind of diet one should follow to avoid heart trouble may depend on which is the greater villain—cholesterol or the triglycerides. Cholesterol still seems to have a stronger relationship with cardiovascular disease, but perhaps only because it has been studied longer.

Other factors than diet obviously influence the prevalence of heart disease in a population. The Academy cited the case of the Masai tribe in Africa which lives almost exclusively on milk and blood. Despite the high intake of saturated fats, the Masai have low cholesterol levels and atherosclerosis and coronary heart disease appear to be infrequent. This same high-fat low-cholesterol pattern also exists in other African tribes. Americans, on the other hand, consistently show a correlation between fats and high cholesterol.

The difference may lie in physical exercise or, though this is less likely, in heredity.

Despite these gaps of knowledge, the Academy report suggested that a slight change in diet toward less fats might be helpful in this country.

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BIOCHEMISTRY

Parkinson's Disease Linked With Chemicals

➤ THE TREMORS and rigid muscles of Parkinson's disease may be due to a shortage of two chemicals in the brain, a Canadian doctor reported.

One of the chemicals—serotonin—had previously been linked with a variety of nervous and mental disorders, but only by circumstantial evidence (its presence or absence in a diseased subject). Dopamine, the other chemical, was known to be lacking in Parkinson's disease victims, but again there was no direct evidence of a connection.

Experiments by Dr. T. L. Sourkes of McGill University, Montreal, Canada, reported at a medical symposium of the American Chemical Society in

Bloomington, Ind., may have provided the "missing link."

Incisions made in nerve pathways in the brains of 40 monkeys produced a deficiency of dopamine accompanied by permanent tremors of the limbs resembling those of Parkinson's disease, Dr. Sourkes said. Incisions were made in the substantia nigra, a nerve relay center of the midbrain. In these cases, a decrease in dopamine but not in serotonin was noted, along with a decrease in limb movement.

Another set of incisions in a nerve pathway linked to spinal nerves produced uncontrolled tremors in monkey limbs and a decrease in serotonin, while the dopamine level remained the same. A combination of the two operations produced a loss in both chemicals, accompanied by Parkinsonian tremors.

This surgical technique should provide a very useful test model for studying the effects of drugs in the treatment of Parkinson's disease and other related nerve disorders, such as Huntington's Chorea and Wilson's disease, Dr. Sourkes said.

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MEDICINE

Pre-Birth Transfusions Save Rh-Negative Infants

➤ MORE RH-NEGATIVE babies are expected to live because of a new instrument that will allow a doctor to see the fetus while he gives a blood transfusion.

Dr. Bernard Mandelbaum of Wayne State University School of Medicine, Detroit, told SCIENCE SERVICE that he hopes transfusions will not be necessary if another method of overcoming the Rh danger is successful, however.

Dr. Mandelbaum told the American Medical Association convention of the partially successful results of intra-uterine transfusion of more than 60 pregnant women who had had indications of difficulty.

With the present method of transfusion, only about one-third of the babies live. With the new instrument, called an amnioscope, the doctor hopes to infuse the placenta or perhaps the umbilical cord.

Rh incompatibility results when the father has Rh-positive blood and the mother has Rh-negative blood. Unless the baby's blood is transfused, the child becomes anemic and dies.

The amnioscope was developed in Chicago at the Illinois Institute of Technology. Although it has been used to make the fetus visible, no actual transfusions have been given with its aid as yet.

"We will work on monkeys first," Dr. Mandelbaum said. Even if the amnioscope is not used for Rh babies, it could be useful in determining fetal defects such as those caused by rubella by making it possible to sample fetal blood."

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NUTRITION

Protein Shortage Seen Solved by Natural Gas

➤ FEW PEOPLE have ever thought of natural gas as a source of nourishment, but edible protein is being made from it at the Shell research laboratories in London.

Some 10 tons of protein can be hoped for from two million cubic feet of gas. The quantity available is enormous and, according to Lord Rothschild, chairman of the Shell group's research council, makes the world shortage of protein look like mere "chicken feed."

The protein is produced by bacteria that feed on the carbon in methane. Such bacteria have been isolated in pure culture from various natural sources such as fresh water and soil.

The bacteria are fed methane in the presence of substances such as ammonia or nitrates as well as natural fertilizer materials. Their normal metabolism manufactures the amino acids of which the protein consists. They are then separated from other substances in solution and freeze-dried.

The result is a light, off-white powder which is now being tested for toxicity on animals such as rats and mice. The powder is about 50% protein.

So far confined to a laboratory scale, the whole project has cost perhaps a few thousand dollars.

The two young scientists responsible for the project are Dr. J. R. Norris, head of the microbiology unit, and his colleague, Dr. D. W. Ribbons. The former is a bacteriologist and the latter a biochemist.

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TECHNOLOGY

Gas-Filled Balloons Replace TNT in Tests

➤ HUGE BALLOONS will be exploding over western Canada later this summer with blasts equaling up to 500 tons of TNT.

At least two such explosions will be set off as part of Operation Distant Plain, a series of shock-measuring experiments. Scientists from Canada, Great Britain and the U.S. Army's Defense Atomic Support Agency (DASA) will be studying the blasts, four more of which will be made with conventional chemical explosives.

The Army's alphabet soup name for the gas explosions is Project SLEDGE (Simulating Large Explosive Detonating Gas Experiment).

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E FIELDS

DENTISTRY

Viet Nam Tooth Troubles Are Army Headache

► ARMY DENTISTS must wish they had never seen a tooth. Every day, a report reveals, the equivalent of an entire division—10,000 to 15,000 men—are treated for one dental ill or another.

In World War I only five percent of U.S. soldiers were evacuated from combat areas with tooth and jaw injuries. By the Korean War the percentage was up to nine, and 15 out of every 100 U.S. troops evacuated from Viet Nam are potential patients for dental surgeons.

And things may get worse. In fact, a study now going on in Viet Nam indicates that the rate may soon get as high as 30%.

In an effort either to reduce injuries or to make teeth stronger in the first place, the Army's Institution of Dental Research is sponsoring all kinds of research, including an opportunistic evaluation of the "effectiveness of rice enrichment of the Armed Forces of the Republic of China."

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MEDICINE

Suggest 'Cocktail' For Shock Victims

► THE HIGH MORTALITY from shock that follows a heart attack may be lowered by a "cocktail" of two chemical agents.

Dr. Eliot Corday of the University of California at Los Angeles Medical School described the action of a mixture of the two pharmacologic agents—norepinephrine and phenolamine—before the annual convention of the American Therapeutic Society in Chicago.

Collaborating with Dr. Corday in the study were Drs. Herbert Gold, Vioresca Enescu and Erno Deszormenyi.

The combination of the drugs tends to enhance blood flow to the heart muscle while lessening the work of the heart. Thus the heart might be tided through the critical period immediately following the attack.

For many years there have been two schools of thought on the best form of treatment of shock that follows a heart attack. One school recommended that blood pressure be restored through use of the vasopressor drug, norepinephrine.

Another condemned use of vasopressor drugs claiming that they caused marked reduction of blood flow to the

intestines, kidneys and skeletal muscles. Doctors in this school of thought suggested use of a drug which causes dilation of the blood vessels and lowers blood pressure. However, recent cardiogenic studies have demonstrated that the latter agents caused increased mortality in shock.

The combination of the two types of drugs may be the answer. Despite recent advances in coronary care units the mortality rate from shock following heart attack remains around 40% to 60%, Dr. Corday noted. It is hoped this new approach may be the answer to this serious problem.

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PUBLIC HEALTH

Prairie Dogs Can Cause Bubonic Plague

► THE HORDES of rats that terrorized 13th century Europe as carriers of bubonic plague have been replaced today by such "harmless" creatures as prairie dogs, chipmunks and rabbits.

Relatively few cases of plague have appeared in the United States since 1900, but these have been enough to almost panic public health officials. One epidemic in 1919 killed 13 of 14 cases, while 34 of 41 died from a 1924 outbreak.

The increasing crowds of people visiting recreational areas that contain animal carriers of the plague are increasing the chances for another epidemic, the American Veterinary Medical Association was told in Louisville, Ky. Dr. William T. Hubbert, a public health veterinarian, together with Dr. Martin I. Goldberg, Dr. Leo Kartman and Frank M. Prince, all from the U.S. Public Health Service's Communicable Disease Center in San Francisco, combined forces to emphasize their views.

Even a single bubonic plague patient can cause an epidemic of "pneumatic plague," they warned, because he runs the risk of developing pneumonitis (acute inflammation of the lung) and spreading it to anyone with whom he comes in contact.

Another problem is that people are attracted to cute little animals such as ground squirrels and deer mice. The prospect of a parkful of picnickers cuddling potential plague carriers is grounds for nightmares among health officials.

Sylvatic plague, found in wild rodents and rabbits, has been reported in about 130 counties in 15 western states since the turn of the century. Carriers in these areas have accounted for 111 known cases of bubonic (human) plague, with 64 fatalities. Since the disease is now a relatively rare one, many doctors have never seen a case, so some may have gone undiagnosed.

Rats are not out of the picture as carriers. The wildlife carriers can transmit the infection to rats.

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TECHNOLOGY

Test of ACS Computer Registry to Be Made

► THE NEW computer-based registry for chemical compounds of the American Chemical Society (ACS) will be tested in support of two Federal agency missions, through an agreement announced by the National Science Foundation.

The Food and Drug Administration (FDA), and the National Library of Medicine (NLM) of the Public Health Service, will designate about 40,000 chemical substances of special interest to these agencies for processing into the Chemical Abstracts Service Registry System.

This "data base" will provide a comprehensive file of synonyms and other "hard core" information about chemical compounds associated with drugs, pesticides, feeds, cosmetics, foodstuffs and other health-related substances.

One objective of the program will be to collect names of substances which are particularly troublesome in providing chemical information for medical research and for public health activities. Such names will be identified with one another through structural characteristics of the chemicals.

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TECHNOLOGY

Patents on Microfilm Seen Speeding Orders

► A NEW SYSTEM of putting patents on microfilm, expected to be in operation within two years, will not only reduce the time in which orders can be filled but may save the U.S. Patent Office half a million dollars a year.

If this cost reduction proves correct, the system will pay off its initial investment of \$2,000,000 in four years. A contract for the microfilm method, known as the Patent Copy Document System, has now been awarded to Recordak Division of Eastman Kodak Company.

More than 3,250,000 patent documents will be converted to microfilm for public sale, Edward J. Brenner, Commissioner of Patents, U.S. Department of Commerce, estimates.

The system is designed to produce printed paper copies of individual patents on order. It will also make available to the public, at a variety of locations, microfilm files of patents arranged by subject matter.

The microfilm copies of patents offered to the public and for examiner use will be stored in the form of aperture cards, which have space for eight images each. The average patent has six pages.

The Patent Office receives more than 25,000 orders daily for patent copies from business, industrial, scientific and technical persons.

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