

MEDICINE

Report Heart Research

Current research reported to scientists at the American Heart Association meeting ranged from anticoagulants to surgery.

CHILLED BLOOD sent through the coronary arteries will cause the heart to come to a complete temporary standstill, enabling cardiac surgery to be performed more easily.

The procedure was described at the scientific session of the American Heart Association in Philadelphia by Dr. Vincent L. Gott of the University of Minnesota Medical School. During the past year, he said, patients' hearts had been stopped for 45 to 60 minutes by chilling their blood supplies to 62 degrees Fahrenheit or below.

The resulting heart stop allowed surgeons to operate on an immobile and dry heart while heart-lung machines maintained circulation to the rest of the body.

Since 1957 surgeons have been able to stop the heart with drugs. The heart starts again when normal circulation is restored and the returning blood washes out the drug.

The use of chilled blood to stop the heart offers several advantages over the drug method, according to Dr. Gott. Cold blood can be sent through the heart muscle from time to time as desired. This prevents oxygen "starvation" of the heart muscle and minimizes undesirable changes in the chemistry of the heart.

The new method makes it possible, Dr. Gott said, to still the heart for a much longer period of time than is usually considered safe with drugs.

Anticoagulants Affected

BARBITURATES, widely used in sedatives or sleeping pills, can interfere with the action of anticoagulant drugs often prescribed to help ward off blood clots in patients with heart or artery disease.

If barbiturates are taken before anticoagulants, the anti-clotting drugs lose their effect, Dr. Murray Weiner of New York City told the Heart Association.

Studies in both animals and humans, he said, showed that the barbiturates apparently prevent the anticoagulants from being absorbed. When sedatives or sleeping pills were given five hours after the anti-clotting drugs, however, this inhibiting effect was not seen.

Too Much Adrenalin

COMPETITIVE, "hard driving" men apparently may get heart disease earlier and oftener than more relaxed persons due to an over-secretion of adrenalin, Dr. Meyer Friedman of San Francisco reported.

Dr. Friedman, a proponent of the theory that "go-getting" men are more likely to

suffer heart attacks than others, told the Association that he found the adrenal glands of "hard drivers" apparently produced more adrenalin and a closely related hormone, noradrenalin, during the working day than the glands of a comparable group of easy-going men.

Studies have shown that men of aggressive behavior patterns had "six to eight times" as much heart disease as those with relaxed personalities. Excessive production of these two hormones during working hours suggests a mechanism through which the personality factor may operate, he said.

Blood Fat Level

HEREDITY is a more important factor than environment in determining the level of certain blood fats sometimes associated with heart disease.

A study of 2,500 persons living in "highly urban" Manhattan and "semi-rural" Staten Island, two different environments, revealed "strikingly similar" average blood cholesterol levels among the residents of both



EXPLORER VII—One of the scientists inspects the satellite on the fourth stage of rocket prior to the launching of the Juno II rocket carrying Explorer VII, with a 91.5-pound satellite into orbit. The launching was under the direction of the National Aeronautics and Space Administration, at Cape Canaveral, Fla. (See p. 301.)

areas. Similar levels within family groups in both areas were also found, providing evidence of a genetic link.

Cholesterol is a fatty substance found in many foods and also manufactured in the body. It is viewed by many doctors as a cause of narrowing and hardening of the arteries.

Other physicians point out that this hypothesis has not been proved.

Results of the study were reported to the American Heart Association by Drs. Louis E. Schaefer, David Adlersberg and Arthur G. Steinberg of New York City.

Operation Cures

AN OPERATION that can cure a condition usually fatal in more than 75% of cases was described to the American Heart Association.

The condition is dissecting aneurysm of the aorta, and occurs when the inner lining of this main artery carrying blood from the heart becomes torn, permitting blood to leak between the inner and outer walls of the vessel. In some cases the condition is naturally alleviated, but in approximately 75% of cases the weakened wall ruptures, causing the patient to bleed to death internally.

Until five years ago, treatment of this condition was unsatisfactory, Dr. Michael E. De Bakey, Baylor University College of Medicine, Houston, Texas, reported. Since then, however, he and his associates have operated on 48 persons with dissecting aneurysms, cutting out the affected section of the aorta and replacing it with a blood vessel graft.

New Blood Dissolver

PAIN, DISABILITY and death resulting from blood clots in the extremities may be reduced significantly by the use of a new clot-dissolving agent.

The drug, a form of human fibrinolysin, was used by Dr. Kenneth M. Moser of the Georgetown University Medical Center, Washington, D. C., to treat a group of patients suffering from severe thrombophlebitis (clotting of veins in the arms and legs). The results of the study were reported to the Heart Association.

The study was made on 62 patients, 30 of whom were given standard anticoagulant treatment and 32 of whom were given fibrinolysin in addition to the standard treatment.

The standard-treatment group suffered pain 76% longer, edema 50% longer, and were bedridden 40% longer than those treated with fibrinolysin.

No toxin reactions to the fibrinolysin infusions were reported, except for a temperature rise in about half the patients. These reactions were treated by aspirin and antihistamines.

Participating with Dr. Moser in the study were Drs. George C. Hajjar and Stephen B. Sulavik of Washington, D. C.

Science News Letter, November 7, 1959

ROCKETS AND MISSILES

Calendar of Satellites

The following listing of satellites launched and space probes made includes important data on these man-made heavenly bodies sent into space by Russian and American scientists and engineers.

First date is launching. Second date is fall, if not still in orbit. Next figure is period. p—perigee, closest distance to earth. a—apogee, farthest distance from earth. i—inclination of orbit to earth's equator. Orbited weights follow, with word-descriptions of experiments, results or significant findings. Principal data from the National Aeronautics and Space Administration.

SPUTNIK I, USSR. October 4, 1957-Jan. 4, 1958. 96.17 minutes. p 142 miles, a 588 miles, i 65 degrees. About 4 tons orbited, 184 lb. instrumentation. Measured internal temperatures, pressures.

SPUTNIK II, USSR. Nov. 3, 1957-April 14, 1958. 103.7 minutes. p 140 miles, a 1,038 miles, i 65 degrees. About 4 tons orbited, 1,120 lb. instrumentation. Cosmic, solar-ultraviolet and X-radiation; carried "Laika" (dog).

EXPLORER I, USA. Jan. 31, 1958, estimated life 3 to 5 years. 109.6 minutes. p 218 miles, a 1,284 miles, i 33.34 degrees. 30.8 lb. orbited, 18.13 lb. instrumentation. Discovered first Van Allen radiation belt while measuring cosmic rays, micrometeorites, temperatures.

VANGUARD I, USA. March 17, 1958, estimated life 200 to 1,000 years. 133.9 minutes. p 403.9 miles, a 2,452 miles, i 34.24 degrees. 3.25 lb. orbited plus 50-lb. 3rd stage rocket. Helped show earth is pear-shaped through geodetic measurements. Still transmitting.

EXPLORER III, USA. March 26-June 27, 1958. 115.87 minutes. p 121 miles, a 1,746 miles, i 33.4 degrees. 31 lb. orbited, 18.56 lb. instrumentation. Cosmic rays with tape recorder. Micrometeor gauge, temperatures.

SPUTNIK III, USSR. May 15, 1958, estimated to Dec. 1959. 97.0 minutes. p 123 miles, a 643 miles, i 65.3 degrees. About 7,000 lb. orbited, 2,925 lb. instrumentation. Air pressure and composition, positive ions, satellite's electrical charge and tension of earth's electrostatic and magnetic fields, sun's corpuscular radiation, composition of primary cosmic radiation. Still transmitting.

EXPLORER IV, USA. July 26, 1958-Oct. 22, 1959. 93.2 minutes. p 151.4 miles, a 386 miles, i 50.29 degrees. 38.4 lb. orbited, 25.8 lb. instrumentation. Corpuscular radiation at several intensities, internal temperatures.

PROJECT SCORE, USA. Dec. 18, 1958-Jan. 21, 1959. 101.46 minutes. p 110 miles, a 920 miles, i 32.3 degrees. 8,750 lb. orbited. 150 lb. instrumentation. Broadcast President Eisenhower's Christmas message; accepted and relayed messages from ground stations in Texas, Arizona and Georgia.

VANGUARD II, USA. Feb. 17, 1959, expect 10-year life. 125.5 minutes. p 354 miles, a 2,035 miles, i 32.88 degrees. 20.74 lb. orbited. Cloud cover.

DISCOVERER I, USA. Feb. 28-March 5, 1959. 95.9 minutes. p 99 miles, a 605 miles, i 87 degrees. 1,300 lb. orbited, 245 lb. instruments. Checked rocket propulsion, guidance and staging, and communications.

DISCOVERER II, USA. April 13-April 26, 1959. 90.5 minutes. p 142 miles, a 220 miles, i 89.8 degrees. 1,610 lb. orbited, 245 lb. instruments and 195 lb. capsule. Capsule recovery failed. Experiment to maintain temperature and oxygen to sustain life; carried emulsion packs to measure radiation.

EXPLORER VI, USA. Aug. 7, 1959, estimated life of over 1 year. 12.7 hours. p 155 miles, a 26,276 miles, i 46.9 degrees. 142 lb. orbited. Measured earth radiation; TV cloud cover scanning; solar recharging of batteries; micrometeorites; magnetic field of earth; behavior of radio waves.

DISCOVERER V, USA. Aug. 13-Sept. 28, 1959. 94 minutes. p 136 miles, a 450 miles, i 90 degrees (polar). About 1,700 lb. orbited, including 300-lb. reentry capsule, not recovered.

DISCOVERER VI, USA. Aug. 19, 1959-Oct. 20, 1959. 91.9 minutes. p 115 miles, a 344 miles, i 90 degrees (polar). 1,700 lb. orbited, including 300-lb. reentry capsule, not recovered.

VANGUARD III, USA. Sept 18, 1959, estimated life 30 to 40 years. 130 minutes. p 318 miles, a 2,330 miles, i 33.34 degrees. 100 lb. orbited, including 50 lb. scientific payload. Measurements of earth's magnetic field, solar X-rays, environmental conditions in space.

EXPLORER VII, USA. Oct. 13, 1959, estimated life 20 years. 101.29 minutes. p 316.6 miles, a 701.9 miles, i 50.07 degrees. 91.5-lb. satellite orbited. Weather research, earth's radiation balance, micrometeorites, space temperatures.

Space Probes

PIONEER I, USA. Oct. 11-12, 1958. Climbed 70,700 miles. Determined radial extent of radiation band. First observation that radiation is a band. First observation of hydromagnetic oscillations of magnetic field of earth. Discovered departure of magnetic field from theoretical prediction. First determination of micrometeor density in space. First measurement of magnetic field in space.

PIONEER III, USA. Dec. 6-7, 1958. Climbed 63,580 miles. Discovered second radiation belt around the earth.

LUNIK (MECHTA), USSR. Jan. 2, 1959. Orbiting sun on 15-month cycle. 3,245 lb. orbited, 794.8 lb. instrumentation. Temperature and pressures inside vehicle, study gas components of interplanetary matter and corpuscular radiation of sun; magnetic field of earth and moon; meteoric particles; heavy nuclei in primary cosmic radiation.

PIONEER IV, USA. March 3, 1959. Now orbiting sun. Passed moon at 37,300 miles. 13.4 lb. orbited. Measuring radiation in space.

LUNIK II, USSR. Sept. 12-13, 1959. Traveled 236,875 miles and hit moon near Sea of Tranquility. Temperature, pressure, earth-moon magnetic fields, radiation, meteorites.

LUNIK III, USSR. Oct. 4, 1959. "Unlimited" life expectancy. Circled moon, returned to earth orbit. Expected orbit data: p 24,853 miles, a 292,000 miles. About 13-day period.