

MEDICINE

Young Men Have Heart Ill

Coronary sclerosis, a disease of the heart arteries usually associated with old age, has been found in varying degrees of severity in young men.

► MANY OF the nation's young pilots have a heart disease known as coronary sclerosis, or hardening of the arteries of the heart.

This was indicated in the report of a study showing that 70% of 221 military flying personnel killed in airplane accidents between October, 1955, and the present had coronary sclerosis in varying degrees of severity.

The study, made by Drs. W. M. Glantz and V. A. Stembridge of the forensic and aviation pathology section, Armed Forces Institute of Pathology, Washington, was described to the Aero Medical Association meeting in Washington, D. C.

Although the percentage of those with coronary sclerosis at the time of their accidental death is high, in 95% of the accidents there was no direct relation between the heart disease and the cause of the accident.

One percent of the accidents, the scientists found, could be traced to heart failure as cause of accident. In the remaining four percent of the cases studied the cause of the accident was unexplained and might have been due to heart failure rather than mechanical failure.

A significant finding in the study was that the average age of the flying personnel with coronary sclerosis was 28 years. This

tallies with an earlier reported study that showed 77% of the soldiers killed in Korea were suffering from heart disease.

Coronary sclerosis is too often considered a disease of old age, Drs. Glantz and Stembridge said.

In many instances it is still treated as such by both the military and civilian agencies responsible for screening pilots and other flying personnel.

The best tool presently available for detecting coronary sclerosis is the electrocardiogram (ECG). The Air Force, however, requires an ECG only when a potential pilot is first screened and then not until the pilot is 40 years of age unless the pilot himself complains of trouble. The Navy gives its first ECG at age 45 and the Civil Aeronautics Board requires no heart test at all for either private or commercial pilots' licenses.

In view of the fact that there is increasing evidence of heart disease in younger males, Drs. Glantz and Stembridge recommended that ECG's be given to all pilots at age 30 and every year thereafter. They recommended the ECG be administered while the pilot is under stress.

They also recommended that more money be put into research to find better techniques of detecting and studying coronary sclerosis.

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on the surface, going around the moon, establishing a satellite around it, and making a controlled landing.

Between 1964 and 1966, landing of instrumented vehicles on the moon, sending manned rockets in lunar reconnaissance.

Between 1967 and 1970, landing small scouting parties on the moon. Depending on the findings of the scouting parties, a decision would be made concerning building a permanent base there.

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TECHNOLOGY

High Accuracy Probe Measures Radioactivity

► COLUMBIA RIVER water used for cooling large production reactors at the Hanford atomic plant must be checked carefully for radioactive content.

An instrument designed to detect trace quantities of radioactive materials that may be present in the river has been perfected by R. W. Perkins, General Electric chemist. It can be used to identify sodium-24, manganese-56, copper-64, arsenic-76, chromium-51, neptunium-239, zinc-65, scandium-46, barium-140, cobalt-60 and manganese-54.

Replacing complicated chemical procedures, a sample of river water is placed in a probe which consists of an activated sodium iodide crystal and a multiplier phototube sealed in an aluminum can. The solids dissolved in the water are then concentrated by evaporating the water.

"Natural background" radiation is minimized by placing the probe in a heavily shielded cell. Measurements of gamma radiation energy content are then fed to an electronic computer where analysis of radioactive content determines the purity of the water.

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ASTRONAUTICS

Design Moon Space Ship

► A NUCLEAR-POWERED, non-stop space liner that would make a surface-to-surface flight from earth to the moon is seen as possible within 12 years.

Dr. Krafft A. Ehrlicke of Convair Division of General Dynamics Corporation envisioned the revolutionary space craft at the Air Force Association's third annual Jet Age Conference meeting in Washington. His proposal would eliminate the intermediate satellite station traditionally conceived as a necessary stepping-stone to interplanetary travel.

Although advancements in the technology of nuclear rocket propulsion are classified, Dr. Ehrlicke said he hoped the current Atomic Energy Commission program would provide practical power plants between 1965 and 1970. This would allow building a two-stage rocket vehicle capable of taking off from the earth's surface and flying direct to the moon or nearby planets.

Dr. Ehrlicke outlined preliminary designs for a 200-foot, 90-ton, two-stage chemo-nuclear vehicle capable of landing a 22,000-pound payload on the moon or orbiting a

30,000-pound payload around the planet Mars.

First stage is a delta-wing glider of 90-foot span, powered with conventional gasoline and liquid oxygen rockets developing 2,700,000 pounds of thrust. It would return to earth after boosting the second, manned stage beyond the earth's atmosphere.

The second stage is powered by feeding liquid hydrogen to a rocket engine that has a nuclear pile as its energy source. Thrust is obtained by expelling a stream of hydrogen ions from the rocket exhaust nozzle.

When in space, the nuclear engine would be positioned by cable 1,000 feet from the crew-carrying gondola to protect the space travelers from radiation hazards.

To land on the moon, the rocket would approach the surface tail first, the nuclear power plant landing 1,000 feet away. The sequence would be reversed for take-off.

Dr. Ehrlicke proposed the following timetable for lunar rocket test launchings, based on "a concerted national effort":

Between now and 1960, first shooting a rocket close to the moon, then impacting



RADIATION ANALYZER—R. W. Perkins, General Electric chemist who developed the ultra-sensitive system of radiation analyses, places a small disc containing a river water salts sample on the probe portion of the electronic device.