

## ASTRONAUTICS

## Men to Mars Possible In 60's, Experts Say

THE UNITED STATES will be able to send three men on a 14-month expedition to Mars in a nuclear-powered two-stage rocket ship during the 1960's, three space experts assert.

The rocket ship would go into orbit around Mars, and the exploring party would use a chemically propelled "taxi" to go down for a close look at the Martian landscape. After exploring for two months, the party would refuel their orbiting space ship and head back to earth.

Tanks of hydrogen, for refueling purposes, would be launched about a month earlier than the manned ship to make certain they are on course and that the hydrogen will be available on Mars. These tanks, taking a slower, easier path, would arrive at Mars after the manned ship. Three tankers each carrying 88,000 pounds of propellant could provide enough fuel for the return flight.

In addition to its three-man crew, the space ship would carry 55,000 pounds in life-support materials, plus the fueled chemical rocket for surface exploration. Food and water alone would weigh 19,000 pounds.

Feasibility of such an adventure was ascertained by M. W. Hunter, assistant chief engineer of space systems, E. B. Koeneck, chief of life sciences, and R. F. Trapp, nuclear engineer, all of Douglas Aircraft Company of Santa Monica, Calif. Full details are reported in *Aero-Space Engineering*, published by the Institute of the Aeronautical Sciences, New York.

Science News Letter, January 16, 1960

## MEDICINE

## Ulcer Patient May Face Post-Surgery Anemia

THE ULCER patient may be wheeled from the operating room straight into new trouble—iron deficiency anemia.

It has long been known that the upper gastrointestinal tract has the body's greatest capacity for iron absorption. When all or part of the stomach is removed, the patient's ability to maintain an adequate iron supply is reduced, a report in *Nutrition Reviews* shows.

Even when only a small part of the stomach has been removed, there can be difficulty: the entire digestive system may go into an abnormally high-speed cycle. The remaining portion of the stomach has less than an adequate chance to absorb iron.

One reason is that the meal passes swiftly through the stomach, which acts as little more than a temporary cul-de-sac in a continuous passage. Or, some patients, bothered by rapid elimination, will tend to cut down on the amount of food they eat.

Even iron pills work less effectively on ulcer patients who have undergone surgery. The overly fast functioning of the digestive system reduces the effectiveness of iron pills given to persons without stomachs.

Normal or near normal utilization of the pills was found to be possible, however, when the patient consumed the pill while lying down.

Posture, speed of the digestive process and the quantity of food intake do not tell the entire story, however. Some persons suffering anemia who have undergone stomach excisions are found to eat an entirely adequate amount of iron and show no signs of hasty digestion.

Using atomic isotopes of iron as "tracers," recent investigators have found that some of these patients just do not have the ability to absorb iron from their food. The problem can be met successfully, however, by consuming inorganic iron in a soluble form. Even among persons who have lost all of their stomach, iron in this form is adequately assimilated.

Science News Letter, January 16, 1960

## ASTRONOMY

## Age of the Universe May Be 24 Billion Years

A STAR CLUSTER 18 billion miles away, appears to be about 24 billion years old—or twice as old as previously believed.

Astronomers are not yet sure that the estimate is correct. If it is, the age of the universe, now thought to be some ten billion years old, will be more than doubled.

The star cluster, part of the Milky Way galaxy, is located in the direction of the North Star. Many of its stars are pretty well burned out. It was estimated that about 18% of the hydrogen in its stars is gone while the sun, believed to be five billion years old, has only lost about five percent of its hydrogen.

Dr. Allan Sandage, astronomer of Mt. Palomar and Mt. Wilson Observatories, reported his observations at the meeting of the American Physical Society in Pasadena, Calif. He studied the cluster, named NGC 188, with the 200-inch Mt. Palomar telescope and the 60-inch at Mt. Wilson.

Science News Letter, January 16, 1960

## AGRICULTURE

## Sodium Mixture Plus Sewage Make Herbicide

SEWAGE can be turned into an effective weed killer, a team of Russian researchers report.

Sodium thiocyanate added to industrial sewage caused complete destruction of plants in areas with a dense weed cover in about two to three weeks. Horse sorrel, dandelion, plantain and lady's mantle were most sensitive to the herbicide, B. Ya. Sigalov, Yu. M. Prokhorova and I. M. Gracheva found.

Grainy hair grass and annular meadow grass were more resistant, they report in *Scientific Information Report* (Dec. 4, 1959), which contains translations from Russian science journals prepared by the Central Intelligence Agency. The herbicide also acts on weed seeds, trees and brush wood.

The Department of Commerce distributes the Scientific Information Report.

Science News Letter, January 16, 1960

# IN SCIENCE

## PHYSICS

## Liquid Used for Cosmetics Valuable in Physics

A LIQUID originally designed as a base for cosmetics is proving very useful to physicists trying to detect the various particles given off by exploding atoms.

Most liquids that give off tiny light flashes, or scintillations, when bombarded by nuclear particles are hazardous if used in large volumes, as is sometimes necessary. Some of them also dissolve their Lucite container, used because it is transparent and easily shaped.

To overcome these difficulties, Drs. H. A. Miranda Jr. and H. Schimmel of Columbia University's Hudson Laboratories, Dobbs Ferry, N. Y., investigated other liquids for use as a scintillator. They found that Dow Corning Silicone-555 fits the requirements. It is water-clear and does not affect Lucite even after prolonged contact, they report in the *Review of Scientific Instruments* (Dec., 1959). The most suitable mixture is four grams of 2,5-diphenyloxazole plus 100 grams of naphthalene for each liter of Silicone-555 fluid.

Science News Letter, January 16, 1960

## GEOPHYSICS

## Russian Glaciers Confirm Climate Warming Trend

A RUSSIAN scientist has confirmed the suspected warming trend of the world's climate by measurements of retreating glaciers and ice formation.

The duration of the ice period on Lake Kallavesi in Finland and on the Neva and Western Dvina rivers is two to three weeks shorter in this century than it was during the preceding 200-year period, he found.

Positions of the glaciers of Gergeti, Yugo-Vostochnyy, Belengi and others located in the central and eastern portions of the main Caucasus range have been measured since 1911. By analyzing these positions, he learned that the speed of the glaciers' retreat is greater in recent years than in the preceding period. Especially large changes in the retreat speed began in 1930, some three times those of the previous years.

Measurements have also shown that the rise in the snow line on the slopes of the mountains of Kazbegi has increased three to four times during the last 100 years.

Other Caucasian glaciers show the same changes in snow line, B. Sh. Tsomaya of Moscow reports. His results appear in *Information on Soviet Bloc International Geophysical Cooperation—1959*, a translation of Russian scientific journals distributed by the U. S. Department of Commerce.

Science News Letter, January 16, 1960

# CE FIELDS

## PHYSICS

### Year-Long Tests Confirm Einstein's Theory

YEAR-LONG tests, believed the most precise yet made, have confirmed preliminary results by the same method that Einstein's special theory of relativity is correct.

The experiments showed no measurable variation in frequency of radio waves radiated by ammonia molecules as the earth moved around the sun during a year. Einstein's special theory postulated that the velocity of light, 186,000 miles a second, is independent of its frame of reference or of the motion of the light source itself. It also applies to radio waves, which travel at the speed of light.

Results of the experiments, conducted at Columbia University at the suggestion of Nobel Prize winner Dr. Charles H. Townes, are reported in *Nature*. His associates found that, at most, less than one-thousandth of the earth's velocity around the sun could affect the speed of light propagation.

High precision of the tests was possible by using two masers. The coined word maser stands for "microwave amplification by stimulated emission of radiation." Previous experiments, starting with the classic Michelson-Morley tests, have confirmed Einstein's theory but not as precisely as the present test.

Science News Letter, January 16, 1960

## MEDICINE

### Low Cholesterol Levels Found in Atherosclerotics

THE FINGER of guilt usually pointed at high cholesterol levels as a cause of atherosclerosis has been nudged aside.

Three Canadian scientists collected information for this controversial medical puzzle from 1953 to April, 1959, consisting of serum cholesterol measurements of 800 older patients. Autopsies on 191 in the group revealed that atherosclerosis occurred as frequently in patients with low cholesterol levels, 150-199 milligrams percent, as in those with moderately high levels, 250-299 milligrams percent.

The researchers found that the severity of atherosclerosis is not directly proportional to the cholesterol levels of the 191 fatalities examined. In addition, they found the complications of this artery-clogging disease occurred as frequently in patients with low as well as moderately high cholesterol levels.

The investigators examined patients between the ages of 50 and 89, mainly. They did concede, however, that there might be a relationship between the severity of atherosclerosis and cholesterol level when it exceeds 300 milligrams per-

cent, a figure most doctors would agree is too high.

Atherosclerosis is a form of arteriosclerosis, the general name for hardening and thickening of the walls of the arteries. When atherosclerosis occurs, fat-like deposits build up along the walls of the arteries. Eventually, the artery becomes completely filled by this deposit, preventing blood flow. Doctors have noticed that many persons who were victims of atherosclerosis also had high cholesterol levels. Cholesterol is a major ingredient in the fat-like substance that is deposited along the artery's walls.

The scientists, whose article appears in the *Canadian Medical Journal* (Jan. 2), are Drs. J. C. Paterson and E. C. Armstrong, and Lucy Dyer, of the Westminster Hospital and the Collip Medical Research Laboratory, University of Western Ontario, London, Canada.

Science News Letter, January 16, 1960

## PSYCHOLOGY

### Studies Show Democracy Begins at Home

DEMOCRACY begins at home should be the guide for the American family, a psychiatrist reported to the American Association for the Advancement of Science in Chicago.

A "touch of chaos" seems to have been introduced into American families by confusion as to the different roles of family members and by the "unclear of many psychologists about the structure of the family," said Dr. N. S. Lehrman of the Albert Einstein College of Medicine.

The anarchic family is partly a result of psychological and psychoanalytic teachings, he claimed. The parents, frightened of frightening their children, often blur or even reverse the basic authority role relationships within the family.

In the democratic family, however, the different roles are clearly defined while the right to peacefully dissent is maintained. The right to dissent is not confused with the responsibility for decisions, Dr. Lehrman emphasized. Responsibilities begin on parental shoulders and are passed on to the children only as they give signs of being able to assume them.

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## BIOLOGY

### Malayan Mosquitoes Steal From Bigger Ants

CERTAIN MALAYAN mosquitoes obtain their entire sustenance from what they steal from ants twice their size.

Described in a report by the Smithsonian Institution, Washington, D. C., these mosquito pirates are much smaller than ordinary ants. Sitting on branches inhabited by ants, the tiny mosquitoes thrust their proboscises between the open mandibles of ants that run through their legs. In this way, they steal the ants' nectar for their own dinner.

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## STATISTICS

### Farm Lads, Lassies Start Drinking in the City

A SURVEY of the drinking practices of 1,185 adults in Iowa reveals that the prevalence of drinking increases among persons raised on farms when they move to the city.

In Iowa, approximately half of the farm residents drink as compared to about two-thirds of the city dwellers, Dr. Harold A. Mulford and Donald E. Miller of the State University of Iowa explain in the *Quarterly Journal of Studies on Alcohol* (Dec., 1959).

Sixty-six percent of city residents, 55% of town residents and 49% of the farm population classified themselves as users of alcohol. The farm-reared group who had migrated to cities demonstrated an urban prevalence for drinking rather than a rural one.

In addition, the highest prevalence rate, 63%, occurred among the college educated, compared with 51% of those with only grade-school education.

The evidence appears to point to some increase in the prevalence of drinking in the future as more Iowans become city dwellers and acquire more education than their parents, the men say.

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## BIOLOGY

### Foreign Moth Imported To Fight Toxic Weed

AN IMPORTED INSECT, the cinnabar moth, has been released along the West Coast in an attempt to control a weed currently threatening horses and cattle.

The moth feeds on tansy ragwort in Europe and Great Britain, U. S. Department of Agriculture researcher James K. Holloway reported. Insect larvae were released in California, Oregon and Washington where there are heavy infestations of the weed. It is hoped the moth will emerge in the spring at the time tansy ragwort plants are starting to form flower buds.

The toxic weed competes with valuable range grasses and is spreading over more land each year. Chemical control is often not economically feasible, the Department of Agriculture reported.

Tests conducted by entomologist Harry Parker at the Department's Parasite Introduction Laboratory, Paris, France, showed the cinnabar moth "has no liking for any useful plants." The moth larvae also will not feed on safflower, a relative of tansy ragwort that is grown as a commercial oilseed crop.

Adult moths emerge in early spring and the females lay their eggs on the underside of the weed's leaves. Larvae feed on the foliage and young buds.

Although the cinnabar moth is not expected to eliminate tansy ragwort completely, it should keep it controlled to the point where the weed no longer causes economic stress.

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