

## GENERAL SCIENCE

# Life-Supporting Planets

**At least a hundred million planets suitable for life, Dr. Harlow Shapley finds, and many of them are likely to be inhabited by sentient organisms superior to man.**

► **THERE ARE** at least a hundred million planetary systems suitable for life in the universe.

Many of these others planets are likely to be inhabited by living, thinking beings equal or superior to man in capabilities.

So suggests Dr. Harlow Shapley, retired director of Harvard College Observatory, in his book, "Of Stars and Men." (See SNL, May 17, p. 316.) The world-famous astronomer has re-examined man's place in the universe in the light of recent developments in many fields of science. Man can no longer consider that he is unique in the cosmos nor that he is at the universe's center.

Dr. Shapley has drawn not only upon his knowledge of astronomy but also of biochemistry, biology, chemistry, geology, mathematics, paleontology and physics.

He concludes that the new discoveries about life, matter and space are "ego-shrinking revelations," and outlines some steps man can take in adjusting to these new facts. Dr. Shapley's essay is "an attempt to build from rough materials a rational and stable structure that contains man and his universe."

Human beings, Dr. Shapley points out, live on the surface of planet number three, in the family of a run-of-the-mill yellowish

star, situated in the outer part of a typical galaxy that contains billions of typical stars. This "home galaxy," the Milky Way, is only one such star system among many billions in the known universe.

Life evolved on earth because certain conditions were within the tolerable limits. These conditions are not exclusive to the earth, Dr. Shapley concludes. They could occur wherever a planet was located at the right distance from a star to provide the water and warmth that living organisms require.

Not only is the earth's sun ordinary, but there is undeniable evidence that the kind of physics and chemistry known on earth holds throughout the universe. Further there are more than one hundred thousand million billion stars.

Even after making the most drastic assumptions limiting the number of planets suitable for life so that only one star in a million million qualifies, Dr. Shapley finds there are at least a hundred million planetary systems suitable for life.

This conclusion naturally leads Dr. Shapley to suggest that human beings may be surpassed in intellectual achievements by higher sentient organisms on other planets.

*Science News Letter, May 24, 1958*

## PUBLIC HEALTH

# Exercise for Long Life

► **IF AMERICANS** are to live longer, they have to get more exercise as children, Dr. Kaare Rodahl, Lankenau Hospital, Philadelphia, told a hospital research conference on maturing man.

"What a man is able to do at 70 years of age depends largely on what he did at seven," the physical fitness expert said.

If children walked to school instead of taking school buses, it would be a step in the right direction. Hiking, running, tennis and jumping are good for children, and golf is a good sport because it promotes a bit of outdoor life among adults.

Studies show Alaskan Eskimos, who work and play in sub-freezing temperatures as a matter of necessity, have three times as much stamina as U. S. airmen.

"In this country, people just don't use their feet," Dr. Rodahl declared. There is little choice in this automobile-jammed land, because there is hardly room to walk or to ride bicycles in heavy traffic.

"It is safer for me to fly to the North Pole, as I have done many times, than to cross the City Line Avenue in front of this hospital," he said.

Norway-born Dr. Rodahl favors skiing

and swimming for keeping fit, and believes that boxing has absolutely no place in a physical fitness program since the human head was not intended to be a target for blows.

There should be a return to the cultural ideas of ancient Greece, where the same man who was honored as a writer or artist could be expected to wear the Olympic laurel, he concluded.

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## NUTRITION

## Change in Activities Affects Metabolism

► **THE MAN** who spends three hours playing 18 holes of golf burns up 370 more calories than does the man who gardens for the same amount of time, three experts in nutrition have found.

Basic cause of overweight is consuming calories in excess of the body's needs. Small increases in the amount of food eaten coupled with small decreases in work output can, over a period of time, be responsible for excess weight, Dr. Herbert Pollack of

the New York University Post-Graduate School of Medicine, reports in the *Journal of the American Medical Association* (May 10).

Each person has his own "basal caloric requirement," the number of calories needed merely to stay alive. This number is based on the individual's age and body surface area. Also, the caloric expenditure per body area can be calculated. A difference of almost nine calories an hour for each square meter of body surface between sitting quietly and standing quietly has been found.

When a small caloric count such as this is multiplied by the total minutes during the day, the amount is large, Dr. Pollack reports. If an individual fails to reduce his caloric intake as he ages and decreases his activity, he will gain weight.

This could happen to a girl who switches from a standard to an electric typewriter. A girl five feet three inches tall, weighing 120 pounds, would "save" 450 calories per week with an electric typewriter. During a period of weeks, this "saving" would increase body weight if her food intake remained constant.

C. Frank Consolazio and Gerhard J. Isaac, both of the Army Medical Nutrition Laboratory, Fitzsimons General Hospital, Denver, Colo., collaborated in the study.

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## MEDICINE

## Injected Bone Marrow May Develop Cancer

► **BONE MARROW** injected into mice to protect them from deadly doses of radiation sometimes develops into cancer that kills the mice it was meant to protect.

This finding was reported to the American Association for Cancer Research meeting in Philadelphia. The studies of long-lasting bone marrow effects were made by Miss Delta E. Uphoff and Dr. Lloyd W. Law of the National Cancer Institute, Department of Health, Education, and Welfare, Bethesda, Md.

Their work followed studies reported several years ago by National Cancer Institute scientists who found mice exposed to lethal doses of total-body radiation, about 900 roentgens, recovered from the effects of acute radiation injury when bone marrow was injected intravenously.

Later studies showed that if the irradiated mice receive bone marrow from the same mice strain, they survived one to two years, somewhat shorter than the normal lifespan. Injected with bone marrow from a different strain, however, many mice died in 21 to 90 days, although they survived the stage of acute radiation damage.

Those that survived more than 90 days developed tumors. Miss Uphoff and Dr. Law undertook to find out whether the tumors of the blood-forming organs came from the cells of the host animal or the bone marrow injection.

Most of the tumors were due to the bone marrow injections from a different mice strain.

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