

ASTRONOMY

**Faintest Star Found
In Southern Sky**

► THE FAINTEST STAR known has been discovered. The sun is more than 2,000,000 times brighter than this star, invisible except on the most sensitive photographic plates.

The star, which is about 30 light years away, was discovered by Dr. W. J. Luyten of the University of Minnesota. A light year is approximately six million million miles. Closest star to the earth is Alpha Centauri, four and a third light years away.

Dr. Luyten reported to Harvard College Observatory, Cambridge, Mass., that the star is very red. It was found on a red photographic plate but was invisible on a blue plate of the same area of the sky, photographed as part of the Mt. Palomar-National Geographic Society sky survey. The star is estimated to be a dwarf star of 20.5 magnitude.

A star's color indicates its temperature, and also the elements present. Blue giant stars are the hottest and brightest, red stars are the coolest and dimmest. The sun, a yellow star, belongs between these two categories.

Astronomers do not know how small this star is, and they expect about a year will be needed to determine its size. It is located in Pisces, the constellation of the fishes, which can be seen in the southern sky during the early evening.

Dim stars help astronomers relate brightness of stars to their masses.

• Science News Letter, 78:328 November 19, 1960

ZOOLOGY

**Panama Howler Monkeys
Have Their Noses Counted**

► LIKE 180,000,000 AMERICANS, the howler monkeys of Barro Colorado Island, Panama Canal Zone, have just had their noses counted. This is the fifth census in 30 years, the Smithsonian Institution reported in Washington, D. C.

The chief census taker is Dr. C. R. Carpenter, professor of psychology at the Pennsylvania State University, University Park. With the help of six associates, Dr. Carpenter counted 814 of these big, reddish-mantled primates, best known for their dawn chorus of roars that sound like a combination of rumbling thunder and the bray of a donkey.

His latest study, which includes motion pictures, has prompted Dr. Carpenter to state that closer study of the ways of these creatures might serve as a conceptual bridge of sorts between the biological and social science fields. Their brains might be a bridge between the realm of lower mammals and the great apes or even man.

The howler's society might also lend a few pertinent facts about the forces that regulate population—facts that could be applied to solving human population explosion problems.

The howlers themselves are a neighborly lot, very socialized, and perhaps even have a distorted sense of humor. They

have wrestling matches and mock fights, but these seldom develop into real fights, even during the mating season. There is, after all, little occasion for strife, the Penn State researchers report. Food, consisting of leaves and fruits, is plentiful and is seldom disputed by any other species.

These tree-top denizens never voluntarily come to the ground, and have mastered their wind-tossed, rain-drenched abode about as thoroughly as have fishes the sea or birds the air.

In groups of three to 45, the howlers travel defined paths through the branches and over networks of vines. Groups often travel single file, an adult male at the front followed by several female and juveniles, with males bringing up the rear.

Baby monkeys ride clinging to the mother's belly until they are a little older, at which time they transfer to the rumble seat. If the mother has any trouble, one or two childless adult females stand ready to help her. Rarely does a baby fall off as its mother swings through the trees, but if it does, the father or another male retrieves it from the ground.

• Science News Letter, 78:328 November 19, 1960

OCEANOGRAPHY

**Study Ocean Currents
With Living Drift Bottles**

► MARINE CREATURES that look like tiny, transparent beer kegs have been used as "living drift bottles" in a study of the ocean currents off California conducted by two scientists at the University of California's Scripps Institution of Oceanography, La Jolla.

Called *Doliolum denticulatum*, the animals rarely grow more than three-eighths of an inch long. The doliolids are plentiful in the central oceans and also off Baja California, the scientists reported to the Office of Naval Research.

They swim only feebly, but have been found as far north as San Francisco, which is the equivalent of a baby's crawling 25,000 miles. Discovering the doliolids so far north is further evidence of the differences in prevailing ocean current patterns during periods of warm and cool water in the Pacific Ocean.

• Science News Letter, 78:328 November 19, 1960

FOOD TECHNOLOGY

**New Method Freezes
And Dehydrates Food**

► VACUUM FREEZE-DRYING, a new food processing method, is being made available for trial purposes by F. J. Stokes Corporation's laboratory facilities in Philadelphia. By this method, water is extracted from the foods to be preserved through freezing by reducing pressure in a vacuum container at low temperatures. The extracted water is changed into a gas, and the food is frozen, free of ice crystals. Nearly 50 foods, including meats, fruits, juices, vegetables and seafoods, have been successfully processed in the Stokes laboratory by freeze-drying.

• Science News Letter, 78:328 November 19, 1960

IN SCIEN

ASTRONAUTICS

**Bags, Legs and Rockets
Tested for Landing**

► HOW CAN a manned space craft be landed without turning it into a coffin? How did the United States and Russia land animals after a trip in orbit? How will the U. S. land our manned space craft?

The National Aeronautics and Space Administration is investigating several strange ways to cushion landing shock. NASA scientists say interior "cushions" of a combination of semirigid plastic and aluminum honeycomb can absorb some of the jolt—but not all of it.

Therefore, the scientists are studying landing bags, bending legs, braking rockets and water.

They will use the easy water technique—water is softer than land so a floatable capsule is directed to drop into water—with the Mercury man-in-space project.

The bags studied for later use on land are of several types. One kind, a flattened round bag, has eight compartments each with a blowout patch so that air can escape from the bag, thus cushioning the space craft without bouncing it.

A vertical-cylinder bag and a spherical bag have also been tested. The bags could be carried at the base of the space craft but not blown up until needed for landing.

NASA has also tested metal legs that would bend more during impact and thus ease the craft's landing. The metal legs would be fixed between the craft itself and its heat shield. This method has been tested in simulated landings on concrete.

A few tests also have been made on a braking rocket. The results so far have been good, NASA reports.

• Science News Letter, 78:328 November 19, 1960

DENTISTRY

**Dental Study Helped
By Radioactivity**

► BY MAKING teeth "momentarily radioactive," scientists have gained a more precise knowledge of the structural relationships of tooth components and of the supply lines which help keep teeth healthy.

Dr. Reidar F. Sognnaes, dean and professor of oral biology at the School of Dentistry, University of California, Los Angeles, has reported that injections of radioactively tagged minerals chemically equivalent to those in teeth have made it possible to study in more detail the structural building blocks of enamel and dentin, the chief bone-like substance of teeth.

Other important knowledge has been gained about the relationship of enamel and the saliva that bathes it and the dentin and its tissue fluids within the pulp or "nerve."

• Science News Letter, 78:328 November 19, 1960

CE FIELDS

PUBLIC HEALTH

Florida Cats With Rabies Attack Human Beings

► CATS, LIKE DOGS, can get rabies, and when they do, they attack humans.

Researchers have examined 44 rabid house cats in Florida. None were known to attack other cats or domestic or wild animals. Humans bitten or scratched by the rabid cats did not necessarily contract the disease.

Apparently rabies is not limited to domestic felines; one case occurred in a bobcat. The disease has also been found in horses, cattle, bats, skunks, raccoons and foxes, as well as dogs.

Because a wide-scale vaccination program started 20 years ago has drastically reduced rabies in Florida dogs, researchers are curious about the source of infections.

Further study is suggested by the investigators, Drs. James E. Scatterday, Nathan J. Schneider, and Arthur L. Lewis of the Florida State Board of Health, and Dr. William L. Jennings of the U. S. Fish and Wildlife Service. The study, supported in part by grants from the National Institutes of Health, Public Health Service, was reported in Public Health Reports, 75:945, 1960.

• Science News Letter, 78:329 November 19, 1960

MEDICINE

Heart Undergoes Chemical Changes

► AS A MAN grows older, his heart muscle undergoes more change, of a certain chemical nature, than other major tissues in the body, two Canadian researchers report.

Drs. Kanaka Mori and Jean-Paul Duruisseau of the University of Montreal have measured the concentrations of sodium, potassium, phosphorus, calcium, magnesium and chloride ions present in the body tissues of rats one to 36 months old. They found that older heart muscle not only showed a decrease in all except phosphate ion, but also confirmed the loss of cardiac tissue water previously reported. This means that the concentration drop was not due to dilution with water.

"These changes in the water and electrolytes (the ions) of cardiac muscle with age may be important to the understanding of various gerontological problems," the doctors state.

The tissue showing the second greatest degree of change was the liver, where all the positively charged ions except calcium decreased as the animal grew older.

Age brought about a "striking decrease" in magnesium concentration of the aorta, where calcium showed a gradual increase.

The brain, by contrast, showed no change, and only chloride increased in the

serum of older animals. There was also little change in skeletal muscle, the type found on the arms and legs. Only potassium and calcium decreased with age.

The doctors state that the decrease in potassium and magnesium in aged heart muscle and liver "might be connected with a general reduction in cellular functions of these tissues."

Other workers, the researchers note in the Canadian Journal of Biochemistry and Physiology, 38:919, 1960, have found a "remarkable decrease" in metabolic rate in the aged heart in rats.

The doctors are now working at the Institut de Gerontologie, Hopital Notre-Dame de la Merci, Montreal.

• Science News Letter, 78:329 November 19, 1960

DENTISTRY

Americans Average Four Cavities Each

► AMERICANS HAVE an average of four untreated cavities each, a total of 700,000,000 untreated cavities in the United States.

By the age of 50, one-half of those in the United States have developed gum ailments, which causes more tooth loss than cavities do. By the age of 65, nearly 100% have gum trouble.

The American Council on Education published these facts and others in a summary report of a two and one-half year survey of dental health, practice, education and research, called "Dentistry in the United States: Status, Needs and Recommendations." The complete 800-page report will be published about Feb. 1, 1961.

Recommendations for improvement of dental health include more widespread fluoridation of water and special Federal grant-in-aid to states, on a matching basis, to assist communities in meeting the cost of initiating fluoridation programs.

Organization of a national voluntary council on dental health is suggested to the dental profession to stimulate public interest.

• Science News Letter, 78:329 November 19, 1960

ENTOMOLOGY

Scientists Learn Facts of Life From Birds and Bees

► CAGED BIRDS that eat insects rather than seeds can be fed bee larvae, entomologists have found.

Researchers working with insect-eating birds in laboratories have had difficulty collecting enough insects for bird food. Drs. Robert Ficken and Robert Stein of Cornell University's ornithology laboratory, Ithaca, N. Y., have found that the birds like bee larvae.

Dr. Norman E. Gary of the entomology department developed special methods for raising and harvesting the larvae whereby a queen bee is placed in a cage where she lays about 1,500 eggs a day. In one week, the queen and her colony can supply a pound of larvae—a week's food for several small laboratory birds. The larvae are high in protein and vitamin A and D, and low in fat.

• Science News Letter, 78:329 November 19, 1960

ANTHROPOLOGY

Aborigines Beat Sir Walter Raleigh

► AUSTRALIAN aborigines were chewing tobacco centuries before Sir Walter Raleigh introduced it to Europe, the anthropologist Prof. J. B. Cleland reported in Adelaide, South Australia, after a journey to the Musgrave and Edward Ranges in the far northwest corner of South Australia.

Aborigines in the ranges still followed their ancestors' immemorial habit of chewing quids of native desert tobacco, Prof. Cleland said. They still carried the quids behind their ears.

Prof. Cleland, now 82, said: "I recently saw natives politely removing quids from their ears to offer other natives a chew, just as a white man offers a cigarette case to an acquaintance."

• Science News Letter, 78:329 November 19, 1960

PHYSIOLOGY

Find Mechanism in Brain That Controls Shivering

► THE MECHANISM that controls shivering on nippy days has been located.

Physiologist Douglas Stuart of the University of California Medical School, Los Angeles, has found a region in the rear portion of that part of the brain known as the hypothalamus that apparently initiates the shivering response.

When this region is electrically stimulated via a tiny electrode in experimental animals, they will shiver as if they were cold. When the same region is destroyed, the animals are unable to shiver in the presence of cold.

Shivering is nature's way of generating heat economically, Mr. Stuart points out. It produces heat without external work, such as is necessary in running or jumping up and down.

In order to warm up the body appreciably, shivering requires another action simultaneously. This involves a constricting of surface blood vessels, which helps preserve heat that would otherwise be dissipated into the air. This action also is controlled from the hypothalamus but from another portion of it.

• Science News Letter, 78:329 November 19, 1960

PUBLIC SAFETY

Fallout Shelter Guide Recommends Standards

► A FALLOUT SHELTER GUIDE for architects and engineers has been issued by the Office of Civil and Defense Mobilization. The guide recommends procedures and standards for evaluating shelter potentials of existing structures and for improving them. The same standards will apply for the building of new structures.

The methods for determining radiation penetration in structures were developed by the National Bureau of Standards. The guide covers everything from shielding to sanitation, ventilation, water and power supply and community survey procedures.

• Science News Letter, 78:329 November 19, 1960