

# • SCIENCE SHORTS •

## A miscellany of happenings and information in various fields the world over

During the Cuban crisis the United States Navy spent \$8.00 per 1,000 gallons to ship water to its base at Guantanamo Bay.

Approximately 70% of the water that falls on land returns to the atmosphere by evaporation.

When ultrasonic energy is directed into tanks filled with a cleaning solution or water it creates millions of tiny bubbles which scour dirt from whatever is in the tanks.

Arizona's estimated 2,600 desert *big-horn sheep* probably represent the largest number in any one state of the breed whose total population in the United States is less than 8,000.

Coastal shelf areas are the most productive areas of the ocean floor.

Food additives, present in food as a result of any aspect of production, processing, storing or packaging, make foods safer and extend their quality.

The Gulf States ranked first in the production of breaded *shrimp* during 1965 with nearly 61 million pounds.

Experiments suggest that phosphorous associated with aluminum in acid pasture soils is more readily available to plants than phosphorous associated with iron and organic matter.

*Smog* seriously reduces the yield, flavor and quality of crops.

A new high-precision "borehole" gravity meter for petroleum is extremely sensitive underground and comes close to being a direct oil-finder.

Increasing amounts of chemical pollutants in the atmosphere make even newly fallen snow unsafe to eat.

Per capita consumption of grain in West Germany has declined steadily from 220 pounds per year in the early 1950s to a current rate of about 150 pounds.

According to some scientists, much of the variation in climate during the geologic past has been caused primarily by the movement of continents across the face of the earth.

Forty per cent of the world's adults are illiterate.

A newly developed glass panel promises such architectural advancements as walls with hues changeable with the season and windows with controllable transparency.

Seven hundred and four institutions enrolled candidates for master's and higher degrees in 1964, compared with 652 institutions in 1963.

Ear protectors of synthetic rubber have been developed to combat diesel noise in French submarines.

Nearing completion at St. Louis, is a stainless-steel arch designed to stand 85 feet higher than the Washington Monument and descend 60 feet below ground level.

A cordless, lightweight vacuum cleaner, operating on a rechargeable nickel-cadmium battery, can clean an area of 15,000 square feet before being recharged.

In 1965 there were 3,200 dental school graduates, but there will still be a deficit of 24,500 dentists by 1975 to meet growing needs.

A special ruby laser, measuring only 12x21 inches overall, can be powered from either a 110-volt AC source or from an automotive storage battery.

An artificial gill, a midipore membrane, of eight square yards, covering a submerged chamber would supply oxygen from the surrounding water equivalent to that found at 10,000 feet altitude and sufficient to keep a man or animal alive.

Nearly half the total farmland in the European Economic Community belongs to France.

A tooth filling material that meets the rugged requirements of the month's environment and pressures exerted by biting has not yet been found.

Experiments are being conducted on both sides of the Atlantic using artificial plastic-fiber seaweed to prevent coastal erosion.

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## 'Jekyll-Hyde' Life Led by Galaxies

➤ INSTEAD OF DRIFTING through space with majestic serenity, galaxies actually lead a "Jekyll-Hyde life," Dr. Allan R. Sandage of Mt. Wilson and Palomar Observatories said.

Galaxies were once thought to be peaceful clusters of millions of stars, Dr. Sandage reported at the Carnegie Institution, Washington, D.C. Mt. Wilson and Palomar Observatories in southern California are operated jointly by Carnegie and California Institute of Technology.

Now it is known that most stars do lead quiet lives. The gaseous component between the stars, however, is in a state of violent motion.

"Explosions of unprecedented energy are occurring," Dr. Sandage said, "explosions in which gas and high-energy electrons are thrown from the central regions. The interaction of the electrons with magnetic fields produces the radio 'noise' later detected by the giant telescopes on earth."

The science of astronomy, spurred by new discoveries in the heavens and new insights from physics, is now passing through a "profound revolution," Dr. Sandage noted. Some of the most ancient riddles about the structure of the universe seem now to be on the verge of solution. Only the scarcity of a sufficient number of large telescopes slows this revolution.

He said that new knowledge about what occurs in galaxies has resulted from the remarkably productive combination of optical and radio studies of the heavens. More energy is contained in a single explosion, Dr. Sandage noted, than would be released by the nuclear explosion of a mass 100 million times that of the sun.

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