

Telescopes will go electronic instead of photographic as now if a study conducted by the Carnegie Institution of Washington, the National Bureau of Standards, U. S. Naval Observatory and the California Institute of Technology is successful.

The photographic method used by the larger telescopes is limited by the inability of photographic emulsions to store useful information beyond a certain point.

This limit is set by the ever-present glow of the night sky and the focal length of the telescope. A committee is considering the possibility of applying to astronomical observations some sort of image storage tube adapted from television-like techniques.

Structure of Nucleus

Much has been found out about the heart of atomic elements by bombarding them with charged helium atoms of relatively low speed and energy.

In the Department of Terrestrial Magnetism research, the atoms do not actually crash into each other. The electric field of the passing particle merely sweeps the atomic nucleus into an excited quantum state, from which it recovers by emitting a gamma ray.

Measuring the gamma radiation with scintillation crystals locates the energy levels in the nucleus, which is valuable basic information about the elements.

Cosmic Ray Variation

A variation in cosmic rays, correlated with the sunspot cycle, has been discovered through continuous measurements at four points since 1937.

The report suggests that the same mechanism may also be responsible for an 11-year variation in the earth's magnetic field. Cosmic rays may be localized or even trapped in orbits in our solar system.

Such a theory involves assumption of extensive magnetic fields in large regions of space.

Atmosphere of Mars

A marking on Mars resembling the letter "W," which moves at about the same speed the planet rotates, was discovered on motion picture films taken during its close approach early last summer.

The "W" marking was near the Martian equator and is presumably a "cloud formation in the upper atmosphere of the planet," the Carnegie Institution of Washington revealed in its annual report.

The fact that the letter "W" is sometimes taken by people to stand for "war" is completely without significance in this case, Dr. Ira Bowen, director of the Mount Wilson and Palomar Observatories, said.

It was chosen as a "convenient letter" roughly similar to the formation. The spread of the "W" was measured as 1,100 miles from tip to tip.

The marking shows only in photographs taken in blue light, not on those taken in yellow light on the same nights. The

yellow-light films do, however, show other markings "easily visible on dozens of exposures" at about the same position as several of the well-known canals.

These, presumably, are surface markings, but the report notes that they appear as "irregular streaks or broad bands rather than as the lines shown on most drawings and maps of the planet."

A new formation in a region often shown as blank was also spotted on the movie films taken by Drs. Edison Pettit and Robert S. Richardson, astronomers of Mount Wilson and Palomar Observatories. The area appeared as a dark blue-green sea that "seems to be a development of the fine complicated structure northeast of the Syrtis Major," a patch visible with a small telescope.

Photographs of Mars in blue light are usually featureless except for bright caps over the poles. Occasionally, however, the atmosphere becomes exceptionally transparent in blue light, so that the surface markings can be seen.

These "blue clearings," as they are known, have previously been thought to be sudden occurrences, but this year's observations showed that they are a phenomenon that takes place gradually rather than abruptly.

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NUTRITION

Dehydrofreezing Tested

➤ SCIENTISTS HAVE added a new process to the food-preservation industry and, at the same time, given the American housewife a new word, dehydrofreezing.

Developed by Government food technologists, dehydrofreezing combines the space- and weight-saving qualities of dehydration with the convenience and flavor-retaining qualities of freezing. Dehydrofrozen apples, for example, have been found to have a much firmer texture when thawed, and to have made better pies than apples frozen in the ordinary way, the scientists report.

Ordinary freezing, the technologists point out, tends to rupture cellular structure, causing many fruits and vegetables to break down when thawed. Partial dehydration prevents much of the initial rupturing. In addition, dehydrofrozen foods retain just the right amount of moisture.

The dehydrofreezing process works in five basic steps: conventional preparation of the food for canning or freezing; an inactivation of the enzymes to prevent browning; rapid drying; packaging and freezing, and storing at zero degrees Fahrenheit.

Dehydrofrozen foods can be reconstituted simply by cooking or soaking in water. Fruits and vegetables now being dehydrofrozen, the U. S. Department of Agriculture scientists who developed the process report, include apples, apricots, peas and pimentos. They also state that six commercial firms are now employing the process.

WILDLIFE

Three Cranes Missing; Fear Population Decline

➤ THE POPULATION of America's rarest and tallest bird, the whooping crane, may have been reduced by three this year.

Although it is still too early to definitely determine the bird's total population, three whooping cranes have failed to return to the Aransas Wildlife Refuge in Texas.

The U. S. Fish and Wildlife Service reported that, in April, 24 birds migrated north, and, to date, only 21 have returned to their winter quarters.

Conservationists are even more concerned about the fact that no young have been identified in the 21 birds that have returned south. There is still hope, however, that the three missing birds will show up and, possibly, bring young birds.

The Service stated that a final count has been planned for late in December, but that if the three birds are still missing by then, the final count may be delayed.

Each year, in the spring and in the fall, the whooping cranes are carefully surveyed by conservationists in the United States and Canada. The count of the Aransas Wildlife Refuge is carried out by aerial survey.

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Dehydrofreezing is available for public use through a patent issued to the Secretary of Agriculture, the Department reports in *Agricultural Research* (Dec.).

"Estimates based on these experimental studies indicate that the processing cost in dehydrofreezing is somewhat greater than in freezing. But lower packaging, freezing, storage, and distribution costs should result in overall saving to users," the food specialists conclude.

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CHEMISTRY

New Amino Acid in Apple Peel, Not Pulp

➤ HERE MAY be another reason for eating the peel as well as the pulp of apples:

The peel, but not the pulp, contains an amino acid, one of the so-called protein building blocks.

Discovery of the acid, which has apparently not been found previously in plant material, is announced by Dr. A. C. Hulme of the Department of Scientific and Industrial Research, Maidstone, Kent, England, in *Nature* (Dec. 4).

The acid was isolated, by using a series of ion-exchange columns, as fine, silky needle crystals. Dr. Hulme believes, on the basis of chemical tests so far, that the new acid is a methyl-hydroxyl-proline.

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