ASTRONOMY

Lichens Possible on Mars

Observations were made by infrared heat-light reflections from the planet which showed that there were no trees, flowers or ferns.

➤ IMAGINE a mountain peak twice as high as Mt. Everest, sticking up 10 miles in the stratosphere. That would be the earth's closest approach to a Martian landscape, as judged by the latest observations upon the planet Mars made at McDonald Observatory, Fort Davis, Tex.

No trees. No flowers. Not even ferns. The only possible life would be mosses and lichens such as cling to lofty, frigid peaks here on earth. There is no chance of the higher life forms such as the most primitive animals, much less anything like a man or a Wellsian monster.

Observations of infrared heat-light reflections from the planet, seen through the McDonald 82-inch telescope, are consistent with the existence there of mosses and lichens in the green areas of the planet.

With Mars 63,000,000 miles away and closer than at any other time in 1947, 1948 and 1949, Dr. Gerard P. Kuiper, director of the McDonald Observatory, used new heat-light measuring instruments to scan the magnified disk.

The polar cap is not "dry ice" or carbon dioxide snow as some astronomers suggested, but is probably ordinary ice or snow. This was indicated by the reflection of light in the spectrum beyond 1.5 microns, where the color was black as are water, snow and ice and not white as carbon dioxide snow would be.

Carbon dioxide does exist in the Martian atmosphere, as discovered at McDonald Observatory last October. Mt. Wilson Observatory observations have shown that no appreciable amount of oxygen exists on Mars, but its lack would not rule out the growth of mosses and lichens on the planet.

Another Martian mystery must be solved before even the lowest forms of life are indisputedly possible. Nothing in the Martian atmosphere has yet been found to filter out the ultraviolet rays of the sun that would be fatal to all life. Nevertheless something does cause the Mars "air" to be opaque so far as the ultraviolet light can be measured. Dr. Kuiper and his colleagues have found that it is not sulfur dioxide, which is a heavy gas produced by volcanoes and meteoric impact. Small amounts of it could absorb the fatal ultraviolet. Very sensitive spectroscopic tests showed no trace of sulfur dioxide on Mars or the moon.

Ozone in the upper air keeps life on the earth from being killed by a supersunburn but this form of oxygen cannot be a shield to Mars as no oxygen exists there.

The ultraviolet light may be stopped on Mars by fine dust in its atmosphere swept up by winds that are known to attain at least 30 miles per hour in some cases.

It never rains on Mars. There are no lakes or oceans, not even any liquid water. The water in the form of vapor or frost would be sucked up by lichens from the air.

The temperature rises to only a little above freezing during the day at the Martian equator and drops to 80 to 100 degrees below zero Fahrenheit by night.

Conditions on Mars are comparable to those on earth at an elevation of 50,000 feet.

This new picture of Mars may be a forecast of things to come for the earth itself. Mars is a worn-out planet with conditions that probably will prevail on earth many millions of years hence when most of our atmosphere has been lost and mankind has long since disappeared.

Science News Letter, March 6, 1948

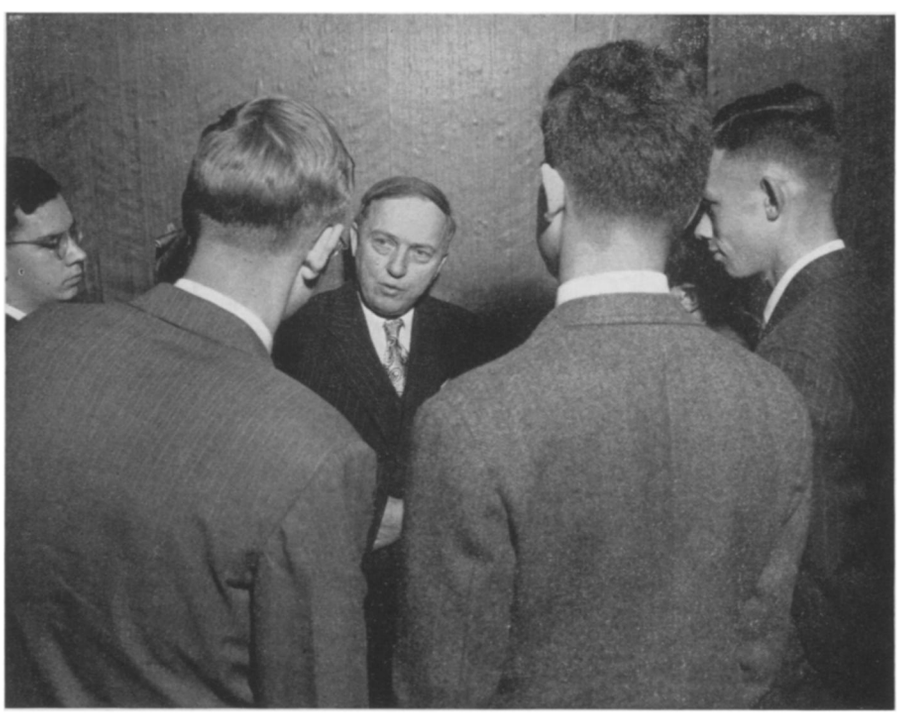
GENERAL SCIENCE

Winning Science Project Puts Boy in Hospital

➤ SCIENTIFIC experiments on straw for insulation material won 17-year old Jim Richardson a trip to Washington to compete for a college scholarship—and the same experiment almost prevented him from coming.

Jim was one of the 40 winners of the Seventh Annual Science Talent Search. He attended the five-day Science Talent Institute where $11,000 in Westinghouse Science Scholarships were awarded.

But the stuff that broke the camel's back, almost brought both fame and bitter disappointment to the local teenage scientist. His description of his work in converting wheat and oat straw into insulation material helped place him among the winners of the Science Talent



QUIZZING THE JUDGE—Dr. Harlow Shapley, director of the Harvard College Observatory and president of Science Service, is answering the questions put by some of the Science Talent Search winners.

Search. Then, Jim found himself in a hospital with a fungus infection of the hands. Doctors diagnosed the trouble as due to handling the straw.

After treatments with penicillin and aluminum acetate solution, his hands began to heal. Jim left the hospital just in time to pack for his trip to Washington.

Science News Letter, March 6, 1948

MEDICINE

Save Six Out of Seven

➤ SIX out of seven babies and children suffering from tuberculous meningitis have been saved by treatment with streptomycin and promizole.

Their cases are reported by Drs. Edith M. Lincoln, Thomas W. Kirmse and Estelle De Vito of Bellevue Hospital and New York University in the *Journal of the American Medical Association* (Feb. 28).

The six children who survived this usually deadly disease have not been under observation long enough for their doctors to call them "cured." But they are all living three to eight months after the start of the treatment and they are all normal mentally with no signs of nerve damage except mild ones in two.

"Streptomycin," the doctors state in their medical report, "has revolutionized our attitude toward tuberculous meningitis. Before this antibiotic was discovered the outlook was hopeless."

Some patients have apparently been cured by the mold remedy alone. But in some cases reported by other physicians, although the disease was apparently arrested by streptomycin, the patients later relapsed and died. And some patients who survived were left with extensive damage to the nervous system.

The decision to combine streptomycin with promizole was based partly on results of the combined treatment when given to laboratory animals. Using the two together, Dr. M. I. Smith of the National Institute of Health had reported, heightens the action of the two remedies beyond the expected value of either alone.

Promizole, which is in a way a relative of the sulfa drugs, brought encouraging results in the treatment of another kind of tuberculosis, the New York doctors had found. Promizole can apparently be given safely and effectively over a period of years, and can be taken by mouth, but it is slow to take effect. Streptomycin, on the other hand, acts quickly on the TB germs but cannot be given by mouth and is more toxic than promizole. It has also the disadvantage that the germs may develop resistance to it. By giving the two drugs together the doctors thought they might get the benefit of the peculiar advantages each has.

The results seem to bear this out and the doctors hope others will be encouraged to try the combined treatment.

Science News Letter, March 6, 1948

BACTERIOLOGY

Expect to Conquer Viruses

➤ VIRUSES, the submicroscopic, almost-alive chemical compounds that cause many serious diseases in plants, animals and man, may some day be conquered with chemical weapons, as bacteria have been overcome by the sulfa drugs and such mold-derived compounds as penicillin and streptomycin. Experiments on the tobacco mosaic disease of plants, reported in *Science* (Feb. 27) by Dr. William N. Takahashi of the University of California, seem to point in this direction.

Dr. Takahashi used malachite green, a well-known synthetic dye, in very dilute solution on tobacco leaves inoculated with the mosaic virus. The number of diseased spots appearing on the treated leaves was a very small fraction of the number that appeared on untreated leaves used as controls.

In these experiments, the dye was used as a research tool rather than as a possible remedy. Dr. Takahashi knew that viruses can multiply only in living cells, and reasoned that they steal the use of certain enzymes, which are compounds used by the cell in its own life processes, to carry on the parasitic life of the viruses. He knew that malachite green blocks the action of some enzymes, and yet is not too poisonous to the whole plant. Results of his work are evidence in favor of his hypothesis. Further evidence is found in the fact that malachite green has no effect on solutions of virus in water, with no cells or enzymes present.

Hitherto no chemical treatment has been effective against virus diseases, with few exceptions. However, if further research with other chemicals indicates exactly which enzymes in the cell the virus borrows for its own nefarious purposes, a long step towards the conquest of the viruses will have been taken.

"Meanwhile," concludes Dr. Takahashi, "the possibility that malachite green may be of some value in the chemo-therapy of virus diseases must not be overlooked."

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