



### Colonizers of Barren Lands

➤ WIND-BEATEN, SUN-BAKED rocks in the driest deserts, bare bones of granite sticking out of mountainsides, glacier-dropped boulders on Arctic islands, volcanic lavas with their fires all spent, even tombstones in old churchyards—these would hardly seem promising places to go botanizing. Yet all of them will yield at least a thin harvest, if you know how to hunt for it.

You need not expect roses and orchids, of course, or even cacti and yuccas at the outset. Indeed, unless some botanist has shown you what to look for, you will take these exiguous gardens of the rocks for part of the rocks themselves, or at best for chance splashes of paint. For these first-fruits of the dead stone are mere films of life—and of life that can “play dead,” if need be, for long periods of droughty time.

These first colonists of earth's barest places are the lichens. A lichen is not a plant, in the sense that a fern or a violet is a plant; it is really a colony of plants—and of two diverse kinds of plants at that. Under the microscope, the structure of a lichen is seen to consist of a close network of fungus threads, enclosing numbers of

lowly one-celled green plants known as algae.

Fungi, being unable to manufacture their own food, have to depend on the carbohydrates and proteins prepared by the algal cells. It is assumed that the algae get some benefit from the arrangement, in the way of protection, and perhaps from the wick-like water-holding action of the fungi. Such a mutually advantageous arrangement in nature is called “symbiosis,” which is a Greek phrase meaning “living together.”

To a perhaps somewhat jaundiced eye, it looks as if the algae in a lichen complex were getting the worst of the bargain; their role appears to be like that of the helots in ancient Sparta, or of the “natives” in a nineteenth-century European colony in the tropics.

There are three general classes of algae: crustose, which are the paint-splash-like kinds, impossible to collect except by chiseling loose chips of the rocks; foliose or leaflike, which form loose, leathery or papery scales, easily picked up; and fruticose or twiggy, of which the best-known examples are the so-called reindeer moss of northern lands and the beard moss that drapes tree boughs wherever the climate is damp and cool.

Many scientists now believe that if any life at all exists on Mars, it is probably some kind of a lichen. It is suggested that the color changes observed to take place regularly on the planet could be due to such lichens.

Science News Letter, June 7, 1952

### AERONAUTICS

## American Airways Now Have Route Numbers

➤ AIRWAYS OVER America now have route numbers similar to those of America's highways. Pilots thus have numbered routes just as motor vehicle drivers have.

Airways running north and south have odd numbers; those running east and west have even numbers.

This new numbering system for American airways, set up by the U. S. Civil Aeronautics Administration, follows the establishment of airways equipped with omnirange stations to guide pilots on their route. On the first of this month, 45,000 miles of airways so equipped were added to the 65,000 miles still using the old style radio beam.

In most cases the numbered airways are superimposed upon, or follow rather closely, the existing routes. Referred to as “Victor” airways, they are 10 miles in width and are divided into 1000-foot vertical lanes.

Of the 45,000 miles of new airways, 35,000 miles are primary routes and 10,000 are alternate routes. To distinguish the primary and alternate routes between two terminals, one is called “east” and the other “west,” if the air pathways extend north and south. For example, if route three has an alternate, one airway would be “Victor three east” and the other “Victor three west.”

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### ASTRONOMY

## Possible Tunnel on Moon

➤ A TUNNEL several miles long and lined with walls of glass may exist on the moon. If it does, it was probably formed by a meteor or “shooting star” passing completely through the upper portion of one of the moon's mountain ridges.

The suggestion of a tunnel on the moon comes from Dr. H. H. Nininger, director of the American Meteorite Museum, Winslow, Ariz. The entrance and exit to his moon-tunnel can be seen with a good telescope.

Through the centuries the moon has been bombarded by meteorites. As a result, it now is probably covered by a very deep mantle of light cindery rubble.

A meteorite moving 20 to 30 miles per second would vaporize the powdery dust on contact, Dr. Nininger reports in *SKY AND TELESCOPE* (June). The material lying just beyond the vaporized layer would melt and cool quickly, forming a glazed cylinder like the fulgerite left by a lightning discharge passing through sand, he points out.

A large meteorite sweeping low as it skimmed across the moon's surface could tunnel its way through the fine dust cov-

ering the moon until it struck the solid material beneath. Ricocheting off this hard submantle, it would burn its way out through the dust covering the moon. Enormous holes would mark its entrance and exit.

Two such holes have long been classified as craters, Dr. Nininger believes. In Mare Foecunditatis, on the western part of the moon, are two so-called craters, Messier and W. H. Pickering, which are very close together and differ greatly from other craters.

The lip or rim of each crater is noticeably extended in the same direction. More important, Dr. Nininger states, the two are on opposite sides of a mountain ridge several thousand feet high and 15 to 20 miles wide at this point. The shape of the holes suggests that a large meteorite did ram its way right through the ridge.

Science News Letter, June 7, 1952

Indications that a person may have defective *hearing* include a listless expression, mispronunciation of words, voice or speech peculiarities, earache, head noises or even an avoidance of people.

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