

Oklahoma, or the deep black soil of Iowa or the soft brown soil of upstate New York has first hand experience that soils can vary in color.

They are different in how they are identified too. Soil scientists often classify them into four general groups according to their recognizable mineral particle sizes. These are gravels, sands, loams and clays. A soil can be and usually is a mixture of more than one of these classes. Each has subdivisions too, such as clay loam, silty clay loam and silt loam. Soils are named by the scientist for their texture. To this is added the geographic name of the place where the soil was first studied, such as Ontario (N. Y.) silt loam.

### Keystone to Soil Formation

A large part of the life of the soil is made up by the life underfoot in the soil. It is a keystone to soil formation. The numbers and kinds of living organisms in the soil can be staggering to the imagination. Soil scientists in one study, for instance, figured out that one gram of soil could harbor from 100,000 to several billion bacteria.

Or, as the New York study puts it, "a tablespoonful of fertile topsoil may contain more of these tiny creatures (microscopic plants and animals) than there are people in the whole United States."

Minute organisms, however, are not the only life beneath the surface of the earth. Many kinds of plants and animals, we are reminded, find ideal living conditions in soil: different kinds in different soils. Many live their whole lives among soil particles. Others live half under and half above the soil.

There are animals that live in the soil, chipmunks, woodchucks and prairie dogs, to name a few. They use the soil "as a cozy home, but go above ground to make a living." The mole, on the other hand, spends almost its entire lifetime burrowing in the dark underground.

Probably the most popular underground inhabitant is the earthworm, who not only contributes to the sport of fishing, but is man's valuable soil engineer. The earthworm passes soil through its body, feeding on the substances in it.

In addition to the larger animals and the earthworm, one can find slugs, snails, sow-

bugs, centipedes and millipedes, spiders and mites, ants, beetles and small animals called threadworms, eelworms or nematodes.

Plants too can be found under the soil. These are tiny plants that lack chlorophyll, the substance that makes plants green. These are mostly fungi and molds. Still others, the Cornell scientists report, are called thread bacteria or actinomyces, which are like molds in some respects and like bacteria in other respects.

Not all plants and animals are helpful. Some are considered harmful soil dwellers.

"Probably no animals or plants are harmful to the soil itself. A few soil dwellers may cause diseases of living things, including man. Some may injure plants that men wish to grow."

The mole, Japanese beetle grub and microscopic threadworms are in this category.

Science News Letter, July 14, 1956

### GEOPHYSICS

## North Pole Farther North 150 Miles Up

► THE NORTH POLE is one degree farther north at a height of 150 miles above the earth's surface, Dr. J. A. Jacobs, University of Toronto physicist, reports in *Nature* (July 7).

He calculated the gradual shift in the position of the North Pole with increasing altitude. Its position at ground level is 76 degrees north, 258 degrees east (102 degrees west) for the year 1942, Dr. Jacobs calculated. For the year 1956, he reports, the latitude must be increased approximately one degree, although there is no appreciable change in longitude.

Science News Letter, July 14, 1956

### OCEANOGRAPHY

## Scientists Studying Long Island Sound Sediment

► SCIENTISTS from the American Museum of Natural History in New York have begun a three-year study of the bottom of Long Island Sound.

The underwater explorers are seeking fossils, microscopic plants and animals and new knowledge of how oil is formed.

Called "Operation Triple S" (Submarine Sedimentation Survey), the project is headed by Dr. Brooks Fleming Ellis, chairman of the department of micropaleontology at the American Museum of Natural History and professor of geology at New York University.

Dr. Ellis calls the project "the first attempt at a thorough analysis of sediment deposition and distribution in Long Island Sound." He says the Sound is "a perfect place to carry on such a survey."

The Sound's bottom is made up of a wide variety of materials, from tiny invertebrates to large marine plants and animals, from black mud that may form oil millions of years hence to the waste products of civilization.

The survey will try to discover more about how these substances get where they are, their relationships with each other, how they become mud and even what that mud may become in several million years.

The project is being conducted jointly by the American Museum of Natural History and New York University, with the support of Abercrombie and Fitch. It will continue through October, 1956, and will resume during the summers of 1957 and 1958.

Science News Letter, July 14, 1956

## How To Keep Cool—on the hottest, stickiest days; with or without air conditioning—by Arthur Carson.

Even if you already own an air conditioner, does it cool off the entire house—or just one room? Actually, you don't have to spend a fortune to make your home comfortable. Settlers in the tropics, the Armed Forces, and scientific laboratories (especially those run by large industrial firms whose employees swelter before blazing furnaces) have discovered hundreds of *little known* facts on how you can cool off fast and stay cool, yet spend very little money—even how to get real summer comfort without the help of electricity or fans.

And how necessary it is to stay cool! "Failure to understand the *many simple and inexpensive* ways by which any home and yard can be made cool has brought sleepless nights, *impaired health*, and in many cases death itself to countless millions of American homes." So declares the conservative foreword of *How to Keep Cool*.

This big book describes practically every scientifically right way known to cool yourself, your home, and your yard—yet spend much less than you'd expect to lay out for even a one-room air conditioner. (And if you should decide to buy an air conditioner, it tells you how to get the right size for your needs—the surest way not to buy too large and costly a unit or too small and thus practically useless a one.)

Why put up with one more heat wave when it's so unnecessary? Send now for *How to Keep Cool*. It's only \$1. Mail name and address with dollar (money back if not satisfied) to HARIAN PUBLICATIONS, 1 Spring St., Greenlawn (Long Island), N. Y.

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—you're allowing your health to suffer if you're a day over 45.

—you take serious and wholly unnecessary chances if you're already in bad health.

—you're flirting with disaster if you're over 65.

If you've always thought that getting real summer comfort means spending a lot of money for machinery, study *How to Keep Cool* for the latest findings of scientific laboratories on how to keep cool simply, inexpensively.