CLOUDS

Erosion in the Grand Canyon.

(Prepared by the National Geographic Society, Washington, D. C.)

THE dainty clouds that float in a summer sky and their darker brothers are only mists, but they constitute nature's sharpest tool for shaping the surface of the earth.

Over and over again, in the millions of years they have been at work, they have carried all the oceans and have hurled them down upon the land—billions of cubic miles of water.

They have washed away mountains greater than the Himalayas.

They have filled up oceans as broad and deep as the Atlantic.

If we were to slice down through the crust of the earth for thousands of feet—a mile, five miles, in places even ten—we would carve through cloud-built rocks, sediments laid down, grain upon grain, each carried by drops of water that have fallen from the skies.

The clouds have carved great valleys such as the Grand canyon.

They bore the feathery snowflakes which built up the huge glaciers that crushed and ground their way equatorward during the Ice ages.

They furnished the chief reagent for nature's laboratory, dissolving and bringing together the minerals scattered through the rocks. The salt that savors our food, the clay that builds our houses, the iron that has made industrialism and the age of steel—to single out but three—are largely gifts of the clouds.

Those are the labors of the past. But the clouds are working now as ceaselessly as they worked eons before man came upon the earth. Like the tools of the sculptor, these chisels of the sun, under the great mallet of gravity are steadily shaping the earth day by day.

They spend themselves to make the streams, to water the crops, to feed the world. But new cloud generations are ever coming on to take their places.

How Clouds Are Formed.

The birth of a cloud is a puzzle to the observer. The sky is apparently clear; then suddenly, seemingly from nowhere, a cloud patch is floating aloft. Nature seems to be playing tricks, like a conjurer who draws kicking rabbits from an empty hat.

Most clouds have their beginnings in the oceans, started by the restlessness of the inconceivably small and inconceivably numerous water molecules that have fought their adventurous way to these great basins.

In the form of water, these little molecules are relatively at rest, huddled close to their fellows, but fairly free to slip about in the crowd of water particles. As they are pressed together, they vibrate, as do all other molecules of matter.

In the delightfully ordered world of the water molecules there is more room at the top than anywhere else, and there the most active molecules—made more active by greater heat—make their way. Like flying fishes, many of the molecules fall back into the water; but, unlike them, some can tear themselves entirely free. It is as if, magically, the fish became a bird. The escaped molecules are in a sense no longer water; they have become transformed by this process of evaporation into a vapor or gas.

Vapor molecules are lighter than the oxygen and nitrogen molecules of the air. The vapor-laden air therefore rises for exactly the same reason that a balloon rises. The warmer the air, the more vapor it can contain. If, on the other hand, warm air containing some vapor is cooled, its capacity for vapor diminishes. This decrease in vapor capacity takes place in a block of moist air as it rises into the cooler upper regions, and if it rises high enough to cool to the critical point, it simply drops part of its vapor load.

Then the Rain Falls.

As more and more droplets gather, they form a great misty mass thick and dense enough to obscure the sky. When water-vapor particles condense into water droplets, whether on their rise from the sea or after numerous cloud-making adventures, they not only grasp their nearest fellow molecules, but they must find infinitesimal bits of floating material, such as dust motes—a sort of magic carpet—and crowd upon them.

Widely separated, the dust motes, with their vapor passengers, at first float about like asteroids in space, but gradually the cold of the upper regions causes more and more of the vapor molecules to jump out of their gaseous form and attach themselves to existing droplets until the latter are built into drops heavy enough to fall earthward.

The greatest speed at which a raindrop may strike the earth, no matter from how great a height it falls, is close to 30 feet a second—a speed less than that of a pebble dropped from a fourth-story window.

In the average cloud that floats on an overcast but rainless day—a cloud such as those that bear most of the world's water from the sea—there are not more than two tablespoonfuls of water in cloud enough to fill the biggest furniture van; and, unless you live in a mansion, your dining room could not hold half the cloud substance that nature has crammed into one glass of water on your breakfast table.

Clouds Work for Man.

Clouds are power for man as well as for nature. The clean white scrap of mist floating in the sky and the grimy, black lump of coal far under ground are brothers under their skins—both children of the sun. One, born millions of years ago and locked deep in the earth, must be toilfully dug out and brought to the surface before it will yield the power it holds. The other, born yesterday, will presently mine itself; and if its fragments are merely guided on their dash to the sea, they seem eager to turn man's machinery.

Man cannot tow his loads of sky coal where he will. Nature sends them along definite highways and dumps them with fair regularity in her chosen places. For ages man used them only near where they fell or along the channels they wore in their slide seaward; but now he has in effect scattered the clouds. He has learned to transmute the downhill wanderlust of their fragments into invisible but potent streams of electrons that will course along wires far from the old limiting channels. And now, though you live in a desert where you seldom see a cloud, you may have those of more favored lands for your servants. Press a button and they light your house, boil your coffee, and perhaps even curl your hair.

Fortunate it is that that portion of the sea which hangs ever in the air is scattered; for if all the clouds should gather and dump their burdens, now over one limited area, now over another, man and his works and most vegetation would be uprooted and swept from the face of the earth.

It is no less fortunate that rivers and glaciers and clouds are pouring water into the seas almost exactly as fast as it is being taken out by the sun. If in some way the amount which now evaporates daily were pocketed in a Gargantuan cave or flung away into space, the oceans would last less than 2,700 years.

Like Snug-Fitting Hats Because of Lightness

Agnes is responsible for a new hat medium that looks like straw jersey and is appropriately named visca jersey. She uses this for turbans and little snug-fitting caps that are particularly recommended because of their lightness. Some of these little draped turbans employ two tones of a single color or contrasting shades and sometimes she uses feathers as a decorative treatment on a little cap. An interesting model has a foundation of visca jersey and is entirely covered with little white feathers dotted in navy blue.

The vogue for very tiny hats that are merely caps is even extended to the evening mode. A Lanvin model is featured in both gold and silver metal lace.

Velvet Jackets Favored

The short, transparent velvet jacket, lined with chiffon and in all colors, is very much favored.

OUR COMIC SECTION

Our Pet Peeve

THE FEATHERHEADS — Me, Too

FINNEY OF THE FORCE — Yes, Too Much Powder

Receives Recognition From German University

Mr. William E. Weiss.

The University of Cologne, Germany, has just paid to Mr. William E. Weiss, of Wheeling, W. Va., one of the founders and General Manager of Sterling Products (Incorporated), and now Vice-President and General Manager of Drug Incorporated, an unusual distinction by bestowing unanimously upon him the title of Doctor Philosophiae Honoris Causa.

Mr. Weiss is the first and only American to be so honored by this world famous German institution. This mark of preferment came to Mr. Weiss in recognition of his efforts to further the industrial relations that have extended over more than a decade between the Directors and Scientific and Chemical staffs of German and American Pharmaceutical firms that are prominent in international industrial affairs.

During the past few years Mr. Weiss has been a frequent visitor to Europe and is a recognized link in strengthening commercial friendship between the old and new continents, a truth emphasized by the action at Cologne.

There Is Hope

Mary—Mother, I'm afraid Mrs. Jones will never visit us again.

Mother—What makes you think so?

Mary—How can she if she keeps on staying?

Not Always on Surface

"He who tells the truth," said Hi Ho, the sage of Chinatown, "must labor long in patient silence to discover it."—Washington Star.

Only Thinks He Has

"So your son has completed his education." "Great Scott, no! Why, he's just out of college."

Rarely Lost

Teacher—"Where are elephants usually found?" Boy—"Please, sir, they're so big they aren't often lost!"

A little love and understanding, thinks the successful wife, writing in Farm and Fireside, will cover a multitude of sins in a husband.