The History of Gypsum

Because water will return Gypsum to its Original Rock Form, Gypsum Has Earned Its Reputation as the "Wonder Mineral" in Construction.

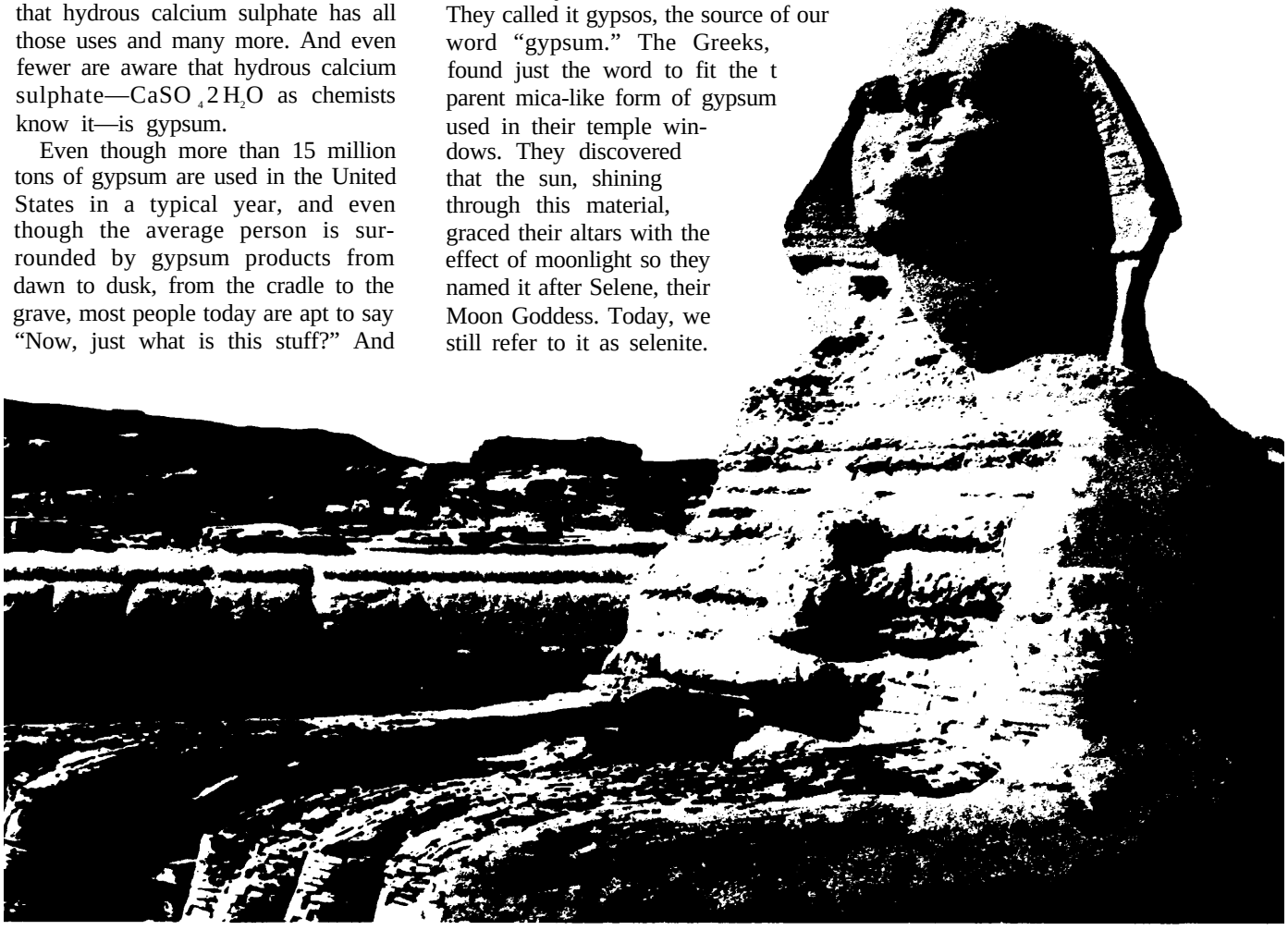
The Egyptians knew about it, and used it in the Pyramids. It's also found in toothpaste; helps make peanuts grow; is found in the walls of your home; and makes many sets for movies.

Very few people have ever heard of "hydrous calcium sulphate." But, don't feel badly. Probably not more than one person in a hundred knows that hydrous calcium sulphate has all those uses and many more. And even fewer are aware that hydrous calcium sulphate—$CaSO_4 2H_2O$ as chemists know it—is gypsum.

Even though more than 15 million tons of gypsum are used in the United States in a typical year, and even though the average person is surrounded by gypsum products from dawn to dusk, from the cradle to the grave, most people today are apt to say "Now, just what is this stuff?" And this, despite the fact that the "stuff' has been known to man for thousands of years.

In addition to being found in the Egyptian pyramids, gypsum rock is referred to in the ancient cuneiform scripts of the Assyrians. Its use was probably developed by the Greeks whose influence certainly remains in the name by which the rock is known. They called it gypsos, the source of our word "gypsum." The Greeks, found just the word to fit the t parent mica-like form of gypsum used in their temple windows. They discovered that the sun, shining through this material, graced their altars with the effect of moonlight so they named it after Selene, their Moon Goddess. Today, we still refer to it as selenite.

Even the very geologic origins of gypsum are unknown. Many experts feel that gypsum deposits are a result of seas which once covered the area where the deposits are located. Evidence of this can be seen today in the Caspian Sea and on the West Coast of the Baja in California. Gypsum usually occurs in veins or ledges, but



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frequently these have been weathered away and the gypsum has been washed into adjoining depressions in the form of sand mixed with earth. This sand is known to the trade as gypsite and has been used to make a very satisfactory plaster. The White Sands in New Mexico, now a national park, and a landing site for our space shuttle, is actually an outcropping of gypsum.

Gypsum is a rock that, like limestone, occurs naturally in many parts of the world. And, like limestone, in an absolutely pure form it is white. However, the usual presence of darker impurities produces rock in varying shades of gray, brown, and even black. Since it normally is found close to the surface, gypsum can be mined or quarried easily.

The hero who first discovered the peculiar property that makes gypsum so valuable remains unsung. But mankind owes him a huge debt. Because gypsum can be ground up and "boiled" or calcined at a comparatively low temperature until three-quarters of its moisture content has evaporated. When that happens, the rock becomes a fine powder, commonly known as plaster of Paris. Our unknown friend discovered that, by returning the water to the powder, he could make a mortar or pliable mass that could be formed into any shape and hardened. Gypsum, he had found, is the only natural substance that can be restored to its original rock-like state by the addition of water alone.

When this great secret of nature became common gossip, it didn't take long for man's ingenuity to put it to work. How well it has served us through the centuries is apparent from a listing of a few of the ways in which gypsum is seen during an average day.

First of all, there is toothpaste. Gypsum forms the basis for some of the well-known brands of toothpaste, and, thereby helps to pay the salary of some of television's best-known entertainers. Most of the fixtures in bathrooms are made of clay formed in a mold of gypsum plaster and chances are that gypsum board is behind the wall tile.

Gypsum Molds . . .

At the breakfast table, plates, cups, and saucers are present which were shaped on or in a gyspum plaster mold, a mixture of plaster of Paris and water. So were the sterling silver handles of knives, forks, and spoons.

The walls and ceilings in a majority of homes are made of gypsum lath and plaster or gypsum wallboard. This guarantees comfort and safety because gypsum is strong stuff and, what's more, fire-resistant.

On the way to work or school people step on sidewalks made of Portland cement which contains a percentage of gypsum to regulate the setting time. Maybe their walk is covered with chalk marks from the game the children played the night before. But, of course, they weren't made by chalk at all but by a molded stick of, you guessed it, soft gypsum plaster. Many

streets and highways also contain their share of gypsum.

Even car windows have a connection with gypsum. They are made of plate glass which was held in a bed of gypsum during the polishing process. Many of the small metal gears, the instrument bases and other metal parts in cars were cast in gypsum molds by a process that was largely perfected during World War II.

Doctors and dentists, too, use gypsum for everything from dental molds to splints.

And so it goes. Everybody uses the rock nobody knows. Benjamin Franklin, the great experimenter, was one of the first to introduce it in this country when he used ground raw gypsum, called land plaster, on his farm. Today, thousands of tons of land plaster are used in the U.S. each year.

Most of the spectacular movie and TV sets are formed from gypsum plaster. At the other end of the glamour scale, gypsum is mixed with manure to make mushroom beds.

But, by far, the biggest part of the gypsum rock used in this country goes into wallboard for homes. Gypsum "boards" are formed by sandwiching a core of wet plaster between two sheets of heavy paper. When the core sets and is dried, the sandwich becomes a strong, rigid, fireproof building material. Manufactured in unbelievable quantities on continuous machines almost a quarter mile in length, gypsum wallboard and lath, prefinished wallboard and gypsum sheathing for use under exterior finishes, are among the most important materials used in housing.

There are more than 85 of these board machines in operation in the U.S. and Canada today, producing approximately 20 billion square feet of material a year. To visualize this gigantic production, think of a pathway 11 feet wide from the earth to the moon or, perhaps a wall 110 feet high around the 25,500 mile circumference of the earth. This will give some idea of the vast contribution the gypsum industry is making to the nation's housing industry.

Despite this tremendous output, though, there is plenty of gypsum to go around. If anything could be said to be unlimited, this could be applied to the gypsum deposits in the northern hemisphere. In the United States these deposits are found in two principal belts-one starting in southwestern Texas and running all the way to the Niagara River in New York State; the other belt starts in the Imperial Valley of California and fans out into Utah with a thin extension into Montana. These deposits range from slightly over a mile wide to 150 to 200 miles in width.

There are a few scattered deposits outside this area, but most of the domestic gypsum comes from these two belts. In addition, several million tons of rock a year are imported from extensive Nova Scotia and Mexico deposits to provide raw material for Atlantic and Gulf Coast plants.

It is one material of which we should never run short.