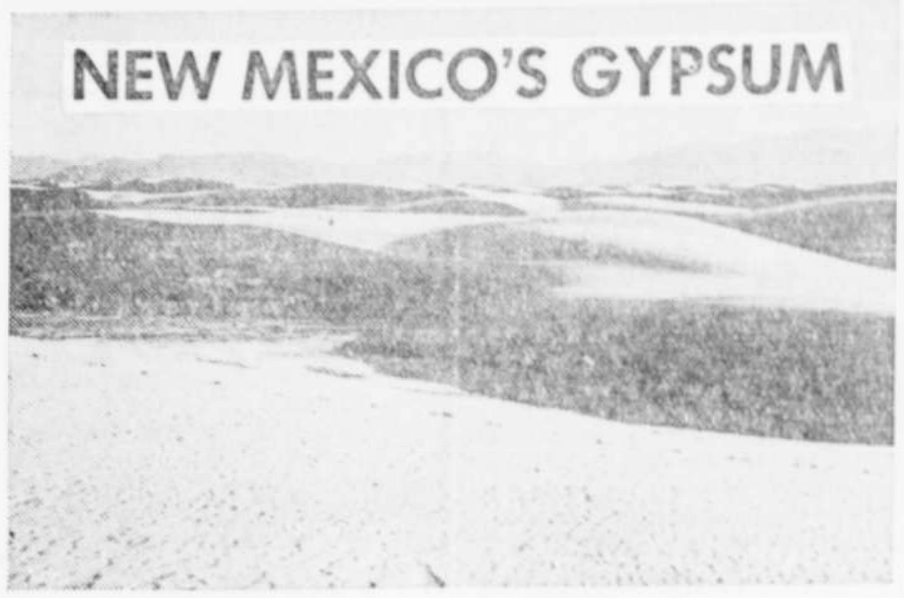
NEW MEXICO'S GYPSUM



The White Sands of Alamogordo.

Prepared by National Geographic Society, Washington, D. C.—WNU Service.

AS ONE stands upon the heights of the San Andres mountains in the neighborhood of Rhodes Pass, New Mexico, one looks out upon an ocean of white. South and east stretches a vast sea on which the glint of whitecaps appears as real as the rocky shores. The view is a startling mirage. Closer inspection reveals that the billowing snowy expanse is the White Sands of Alamogordo.

The windrowlike dunes seem velvety in their softness, yet many of them are firm enough to permit motorists to roll their cars from one crest to the next in roller-coaster fashion. Some of the hills have attained a height of 100 feet, but 50 feet probably represents the average.

Curious stories of the origin of the sands have circulated since they have been known to Americans, but the truth is not less interesting than the fanciful explanationas. The processes of making are going on constantly.

Underlying the Tularosa basin are beds of Permian limestone and sandstone, between the layers of which are interspersed thick beds of gypsum. Borings made in recent years reveal that the gypsum is hundreds of feet below the present valley floor and that water is encountered at depths of a thousand feet or less.

The nature of the sedimentary rocks above the water-bearing sands is favorable to upward seepage. As the water on its upward course passes through the gypsum deposits, it dissolves that material and carries a rather full load to the surface. The limestone through which the solution passes is not readily soluble; very little in addition to gypsum is carried by the rising water. When evaporation takes place at the surface a fairly pure crust of gypsum is deposited, which, under action of the atmosphere, crumbles to form crystalline grains.

The prevailing southwest wind sweeps these crystals from the surface upon which they were formed and piles them in huge drifts to the north and east of the point of origin. The wind erosion excavates basins, the flat floors of which may be 10 to 30 feet below the surface of the plain and 50 feet or more below the tops of the dunes.

Basins of Moist Sands.

Nearly everywhere in the basin floors moist sands are encountered at a depth of a few inches. Ordinarily sand erosion does not develop flat surfaces, but the flatness of these floors is manifestly caused by the water table which limits the depth to which the sand can erode.

The largest of the basins from which the sands are blown is a boggy lake bed at the south end of the dune area, but many of the smaller flat floored depressions are scattered through the area. The size of the depression apparently affects the height of the sand piles built up to the lee of it.

Hills and mountains surrounding the Tularosa basin contain gypsum, and it is evident that some of the deposit is brought from this source by surface waters that feed it to the large natural evaporation pan at the south end of the sands. Whether the source is the deeply buried beds or the visible deposits in the mountains, the processes of evaporation, crumbling, and drifting with the wind are the same. The end product is invariably beautiful, white, winnowed, and clean.

The picture afforded in this expanse of white sand is unlike anything known. The white environment has produced a notable effect upon the limited animal life of the sands, and zoologists look to this natural laboratory for possible answers to questions bearing upon adaptation. Botanists long ago turned to the White Sands as a field in which to study the responses of plants to unusual physical influences.

In places large cottonwood trees nearly covered up with sand live a strange existence, producing roots where upper branches once grew. When the sand drifts and exposes their modified anatomy, they still stand, amazing specimens, with roots interspersed with dead branches along trunks much changed as a result of long burial.

Disinterred specimens of the yucca are to be seen that have struggled in an effort to keep their heads above the shifting sands until their stems have elongated to some thirty feet.

"Red Lakes" Come and Go.

For several years the appearance and disappearance of "red lakes" in the sands have caused conjecture among biologists and chemists. Studies made during the last few months have tentatively identified an organism which may be responsible for the strange color changes that take place in the waters of certain ponds and pools. Apparently the vermilion "lakes" can exist only when the water has evaporated to a condition of high salt content, for the organism is known to grow only in salt water of high concentration.

Sites once occupied by an ancient people are well known to the present residents of the region, and obscure reminders of early Spanish activity are to be seen in many places throughout the valley.

Three centuries ago Spanish explorers and missionaries frequented the Tularosa desert and wondered at its white sands. They noted the unusual chemical properties of the nearly 300 square miles of drifting gypsum and, quite likely, wished for means of transporting this abundant supply of pure alabaster to the settlements and churches a hundred miles to the north.

Recently, at the mouth of Deadman canyon in the San Andres, just west of the White Sands, a prominent son of the state of New Mexico uncovered unmistakable evidences that the Spanish Americans of a generation long dead had entered the Tularosa desert area with vehicles. Divulgence of this forgotten travel came in the form of two massive wooden wheels from an early Mexican oxcart.

If an authentic story could be woven about those relics, perhaps the period of the bullwhacker who abandoned his conveyance would be established as no earlier than the Nineteenth century. However, maps of the padres and dons definitely point to Eighteenth century routes east and west across the Tularosa as well as north and south, where the trails parallel the mountain boundaries of its basin.

No written record of moment is known to have come down from the Mexican predecessors of the inhabitants of the Tularosa region, nor have many of the American pioners left contemporary journals. The local frontiersman did, however, experience a phase of Americanism which has produced a rugged folklore replete with gripping stories of bravery, outlawry, and cold revenge.

Many Uses for Gypsum.

The value of these sands for plaster of paris and fireproofing material is well recognized, and repeated attempts have been made to make commercial use of them.

Gypsum finds a multitude of uses in commerce and industry. As a fertilizer and soil conditioner it is distributed as "agricultural gypsum." As "mineral white" it finds use as a filler in paper, paint and fabrics. The makers of Portland cement require it as a retarder. In sculpture and the making of decorative devices in architecture and building it is known as "alabaster." Even the school boys' crayons utilize much gypsum.

When natural gypsum is dehydrated by heat, it becomes the quick-setting cement known as "plaster of paris." About four million tons of this calcined gypsum are used each year for wall plaster or stucco. Plate-glass makers imbed their glass in plaster of paris preparatory to polishing.

Plasterboard, wallboard and gypsum lath require much gypsum each year. "Gypsum blocks" and tile are used in partitions, roof construction, and flooring, where fireproofing and sound insulation are important. Surgeons, dentists, and artists demand the finer grades of calcined gypsum for casting plaster.

Dreaded By Pioneers.

It appears on first thought that here in the nearly pure gypsum of White Sands is a veritable fortune in plaster. But Tularosa is far removed from large markets.

Old settlers of the region have watched, feared, and hated the White Sands for half a century. This, one of the world's greatest deposits of pure gypsum, has grown before their eyes, threatening homes and land that might be useful.

These pioneers—cattlemen, sheepmen, farmers, and lumbermen—had few interests outside their own business. The spreading sands, ever increasing in volume, struck dread into the stockman, who came to believe that the snowy-white mass would creep upon and envelop not only his ranch, but the towns of Alamogordo and Tularosa—now 15 to 20 miles from the heavy white sea.

With the increase in population in the little cities about the basin there came the realization that the alabaster dunes provided charming sites for church picnics, school parties, and lodge gatherings. Intimate and happy association with the sands caused fear to turn to love and pride. In 1930 the communities of Alamogordo, Las Cruces, El Paso, Carlsbad, Artesia, Roswell, Mescalero, Ruidoso, Cloudcroft, and Tularosa joined forces in an effort to create a national reservation in the White Sands.

Commercial interests revived old hopes and argued that this vast tract of gypsum was too valuable for manufacturing purposes to be "wasted in recreation." Statistical studies precipitated by this argument revealed that within the 176,000 acres of the White Sands is enough building material to reproduce the fireproof walls of every skyscraper in America, to duplicate all wallboard ever manufactured, to replace every piece of interior decoration and statuary on the American continent, and still leave one-third of the Tularosa gypsum untouched.

Dedication of Statue of Liberty

The Statue of Liberty was unveiled on October 28, 1886. For the ceremonies a platform was erected against the side of the pedestal on Bedloe's island. The order of procedure was as follows: Music, signal gun, prayer, talk by Count Ferdinand de Lesseps, presentation address by William H. Evarts, unveiling by Bartholdi, the sculptor; salute, music, acceptance of the statue by President Cleveland, talk by the French delegate, M. A. Lefaiore; commemorative address by Chauncey M. Depew, doxology, benediction, national salute.

Through A WOMAN'S EYES

by JEAN NEWTON

WHAT IS A LIE?

ONE of our readers asks how far it is safe to follow "this newfangled notion of the psychologists" that children must never be regarded as lying, for what they do is only "wish thinking." She sends us something on the subject that appeared in a newspaper. Here it is:

"When we persist in demanding of them absolute truthfulness of our children, we neglect to make allowance for the child's natural tendency to say what he wishes were so instead of what actually is so. The same drive which makes a child forget duties and remember pleasures, which makes him invent delightful happenings in place of painful and humiliating ones, causes him sometimes to distort the behavior of others. He supplies for their actions the motives and interpretations which are more agreeable to him than the actual ones. He misconstrues what they do and say in his own favor—and all this he does quite honestly and innocently."

It seems to me that there is a good idea gone wrong. It is the other extreme from the rigorous and cruel viewpoint of making a child feel like a criminal for indulging in a little "wish thinking" or allowing an active imagination to slightly color or exaggerate an incident.

I believe it is unquestionable that a child should never be made to feel like a criminal, should never be called a liar. On the other hand it is no less dangerous and wrong to condone such disregard of veracity as "misconstruing in his own favor the actions of others." In this case I believe a spade should be called a spade. For the child is father of the man. Our child self with the child is building the character of the man. And while a certain imaginative phase of babyhood may be disregarded as quite harmless, there are very definite limits, it seems to me.

If we are to encourage the "natural tendency to say what he wishes were so instead of what actually is so," it is not a very far cry to saying that something which belongs to another boy is his. And what then about appropriating that dollar which he "wishes" were his? Also if we are to accept with approval distortion in his favor of the behavior of others, what shall we say if later he says "I borrowed that boy's bike because he told me I could"—or of some damage for which he is responsible that "the other fellow did it?"

Compared with many of the old ways, today's methods of dealing with children are a distinct improvement. But it is important always to avoid dangerous extremes, to keep within the guiding light of common sense.

Bedtime Story by Thornton W. Burgess

THE ROBBERS DECIDE TO FIGHT

WHEN one of the young robber rats at the meeting of all the rats in the big barn which Billy Mink had visited boasted that he never had seen anyone he couldn't hide from, all the other young rats nodded their heads in approval. You see they prided themselves on knowing every hiding place in that big barn, and they never had known an enemy small enough to follow them to these hiding places. So

"Knowledge of Life Is Obtained Only Through Experience," He Began.

when the gray, old leader of that robber gang said that unless he was greatly mistaken they were likely to have a chance to see someone they couldn't hide from, they at once demanded to know what he meant.

The old leader looked around the circle of rats waiting for him to speak. There were big rats, little rats, and middle-sized rats. There were rats gray with age, and sleek young rats. He counted noses. Every rat of the tribe, save only the babies too small to leave the nests, and the one whom Billy Mink had caught, was present. In the faces of the gray old rats he could see worry. Like himself they understood the danger they were in. In the faces of the younger rats there was no worry. It was plain to see that they felt quite confident of being able to take care of themselves. Never in all their lives had they met an enemy they could not run away from, and he knew they didn't believe such an enemy existed.

"Knowledge of life is obtained only through experience," he began. "You who are so sure you can hide from this new enemy are confident because you are ignorant. Cats and dogs you do not fear because you can go where they can not follow, but this mink who has found our den can follow where any of you, even the smallest, can go."

"But if he does not see us how can he find us?" squeaked a sharp-nosed young rat.

"A mink does not have to see in order to follow," retorted the gray old leader. "You cannot move without leaving a scent which he can follow by means of his wonderful nose. All he had to do is to find where you have been and then follow straight to where you are hiding. He can run faster than you can and longer than you can. There is no escape from him, once he sets out to catch one of you. The best fighter among us is no match for him alone. I tell you, friends, our tribe is in danger. It is in the greatest danger it ever has faced. I have called you together to make this plain to you and to get your ideas as to what we should do."

For a few moments no one spoke. The worried look on the faces of the older rats had crept into the faces of the younger rats. Finally a scarred old fighter spoke. "It seems to me," said he, "there is only one thing to do, and that is fight. What one of us alone can not do, all of us together can. I propose that the next time the enemy appears we all attack him together."

To this all the rats agreed.